

# Service Manual

**PIONEER**  
The Art of Entertainment



ORDER NO.  
**CRT1335**

MULTI-CD/TUNER CONTROL DSP DECK

# KEX-M900

US, ES

- See the service manual CX-156 (CRT-468) when servicing the cassette mechanism assy.
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- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

## CONTENTS

1. CONNECTING THE UNITS.....	3	11. SCHEMATIC CIRCUIT DIAGRAM(3).....	53
2. PARTS IDENTIFICATION.....	3	12. CONNECTION DIAGRAM(3).....	55
3. PARTS IDENTIFICATION(DISPLAY).....	6	13. SCHEMATIC CIRCUIT DIAGRAM(4).....	57
4. DISASSEMBLY.....	8	14. CONNECTION DIAGRAM(4).....	59
5. CIRCUIT DESCRIPTION.....	11	15. SCHEMATIC CIRCUIT DIAGRAM(5).....	60
6. ADJUSTMENT.....	16	16. CONNECTION DIAGRAM(5).....	61
7. CONNECTION DIAGRAM(1).....	42	17. CHASSIS EXPLODED VIEW.....	62
8. SCHEMATIC CIRCUIT DIAGRAM(1).....	45	18. CASSETTE MECHANISM ASSY EXPLODED VIEW.....	66
9. SCHEMATIC CIRCUIT DIAGRAM(2).....	48	19. PACKING METHOD.....	70
10. CONNECTION DIAGRAM(2).....	51	20. ELECTRICAL PARTS LIST.....	71

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## SAFETY INFORMATION

### CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

### WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

## SPECIFICATIONS

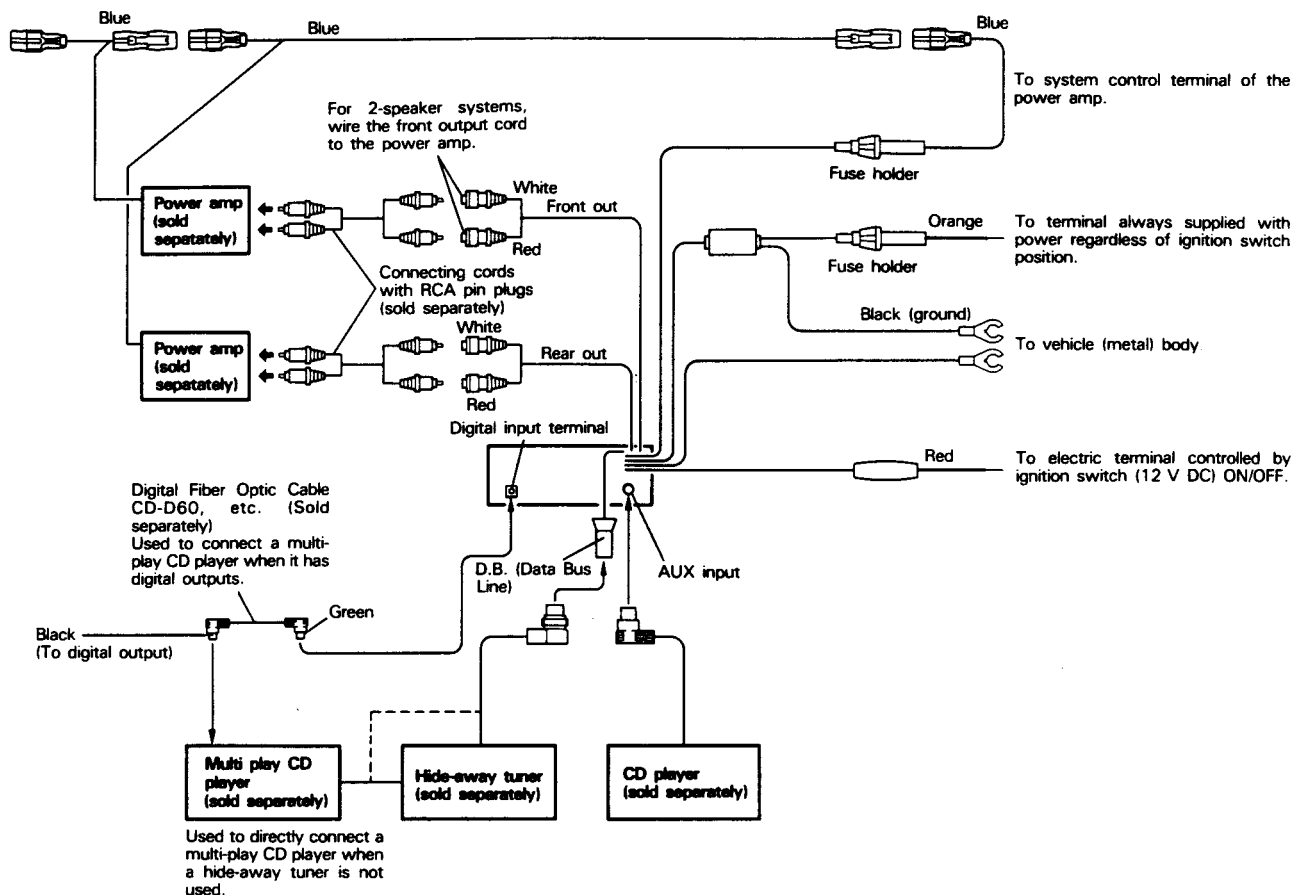
### General

Power source	14.4 V DC (10.8–15.6 V allowable)
Grounding system	Negative type
Dimensions (chassis)	178(W) × 50(H) × 150(D) mm [7(W) × 2(H) × 5-7/8(D)]
(nose)	178(W) × 49(H) × 18(D) mm [7(W) × 1-7/8(H) × 3/4(D)]
Weight	1.8 kg (4.0 lbs.)
Tone controls (parametric)	
(Bass) Frequency	63, 100, 160, 250 Hz ± 12 dB
(Treble) Frequency	4, 6.3, 10, 16 kHz ± 12 dB
Equalizer	
(3 band parametric EQ)	
Frequency	20 Hz, 25 Hz, 31.5 Hz 40 Hz, 50 Hz, 63 Hz 80 Hz, 100 Hz, 125 Hz 160 Hz, 200 Hz, 250 Hz 315 Hz, 400 Hz, 500 Hz 630 Hz, 800 Hz, 1 kHz 1.25 kHz, 1.6 kHz, 2 kHz 2.5 kHz, 3.15 kHz, 4 kHz 5 kHz, 6.3 kHz, 8 kHz 10 kHz, 12.5 kHz, 16 kHz 20 kHz
Equalization range	± 12 dB
(7 band EQ)	
Frequency	60 Hz, 125 kHz, 250 kHz 500 Hz, 1 kHz, 3.5 kHz 10 kHz
Equalization range	± 12 dB
Loudness contour	+ 10 dB (100 Hz), + 7 dB (10 kHz) (volume: - 30 dB)
Preout output level	500 mV
Output impedance	1 kΩ

### Tape player

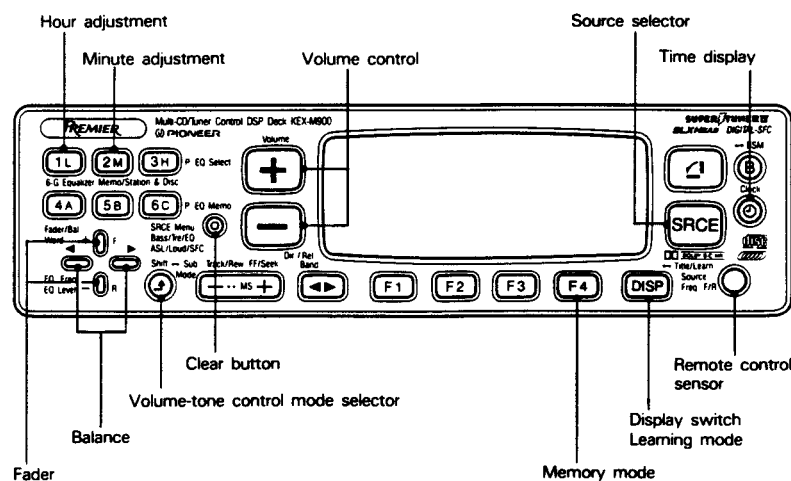
Tape	Compact cassette tape (C-30–C-90)
Tape speed	4.76cm/sec. (+0.14cm/sec. - 0.05cm/sec.)
Fast forward/rewind time	Approx. 100 sec. for C-60
Wow & flutter	0.06% (WRMS)
Frequency response	Metal: 25–22,000 Hz (± 3 dB)
Stereo separation	50 dB
Signal-to-noise ratio	
	Metal: Dolby C NR IN: 73 dB (IHF-A network)
	Dolby B NR IN: 67 dB (IHF-A network)
	Dolby NR OUT: 61 dB (IHF-A network)

## 1. CONNECTING THE UNITS

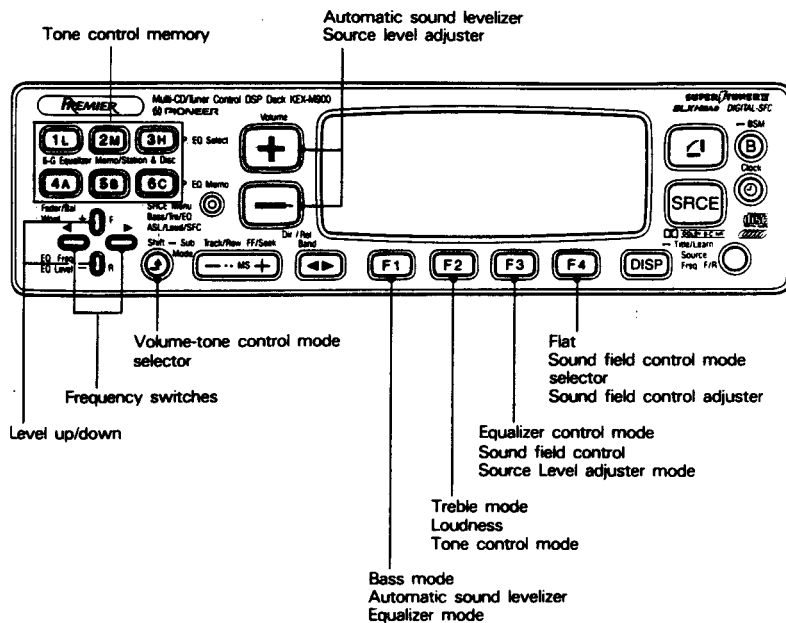


## 2. PARTS IDENTIFICATION

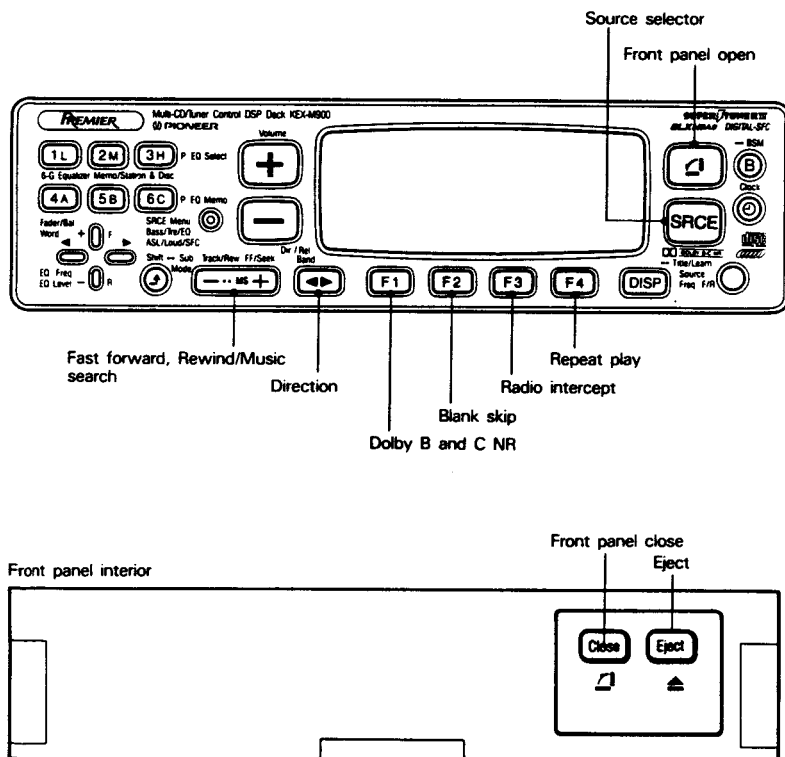
### Common Parts 1



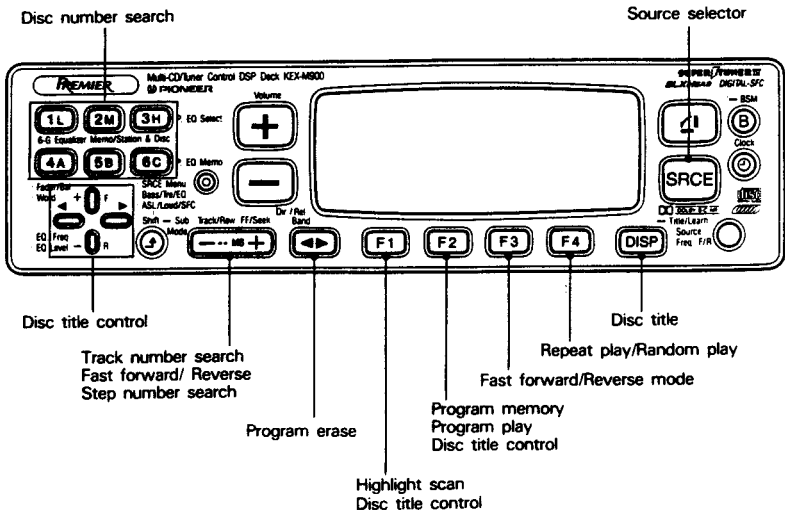
## Common Parts 2



## Tape Deck

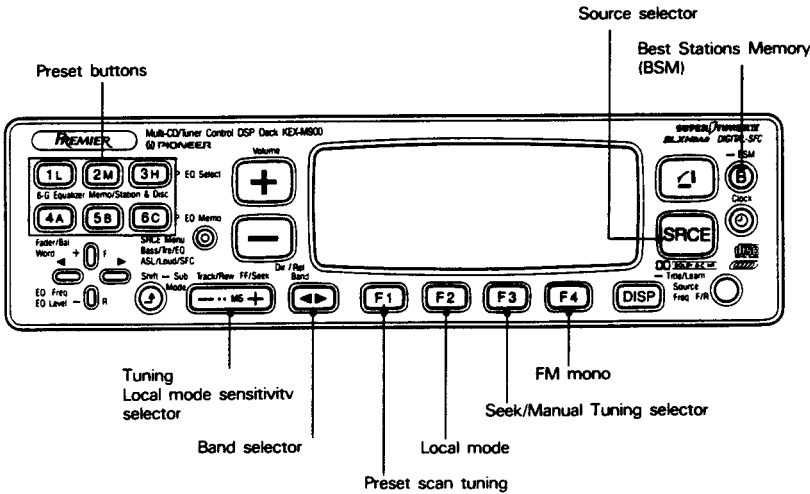


# Multi-Play CD Player



- The multi-play CD playback function requires connection to the separately available multi-play CD player.

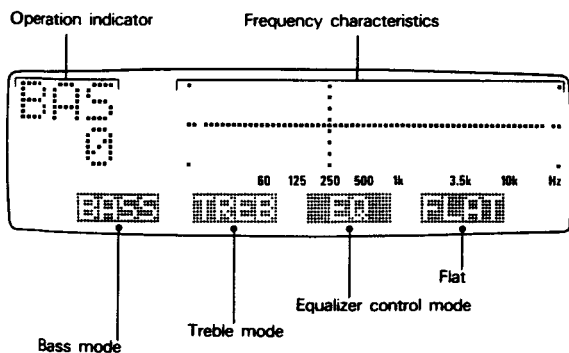
# Tuner



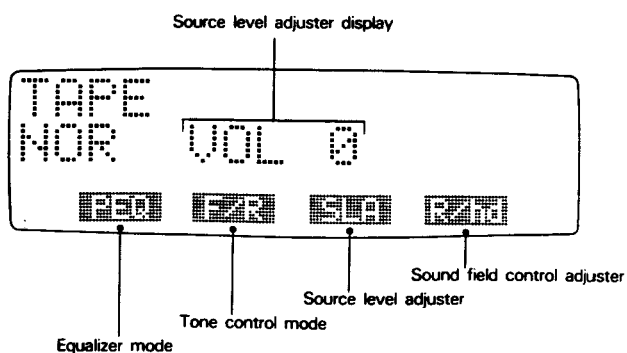
- The radio tuning function requires connection to the separately available FM/AM hide-away tuner.

### 3. PARTS IDENTIFICATION (DISPLAY)

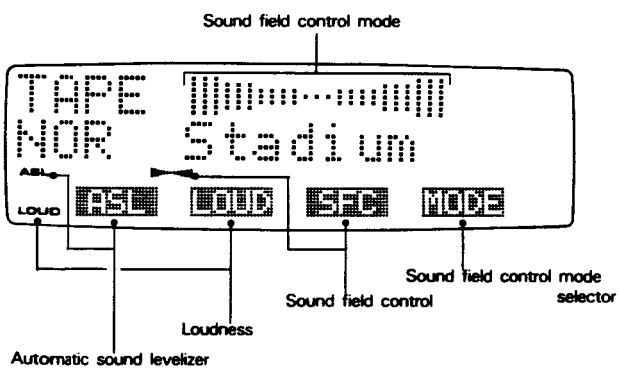
Common Parts (Volume-tone Control Mode 1)



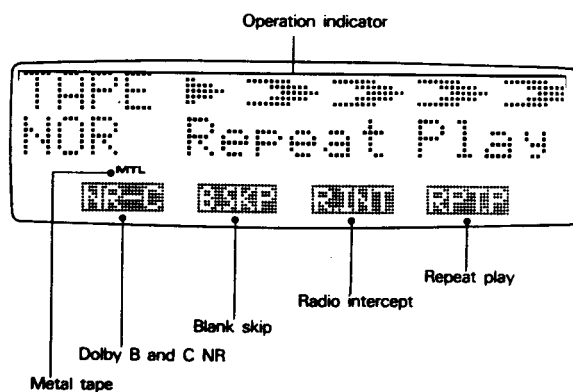
Common Parts (Volume-tone Control Mode 3)



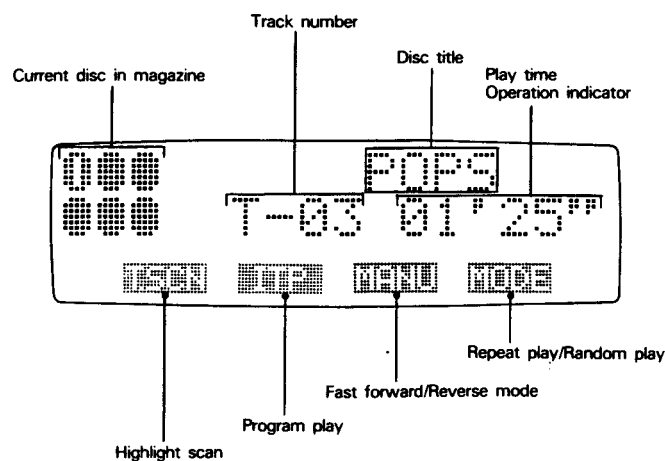
Common Parts (Volume-tone Control Mode 2)



Tape Deck

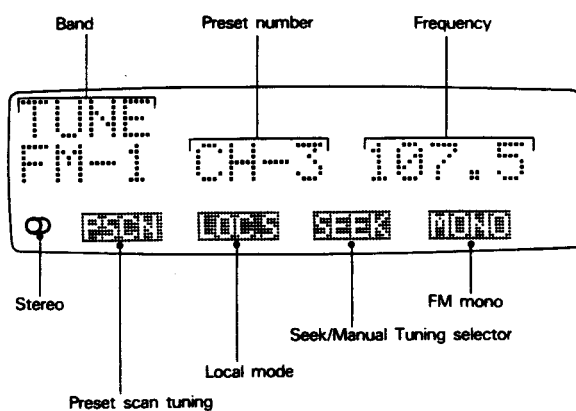


## Multi-Play CD Player



- The multi-play CD playback function requires connection to the separately available multi-play CD player.

## Tuner



- Radio reception requires connection to the separately available FM/AM hide-away tuner.

## 4. DISASSEMBLY

### ● Case

1. Remove the four screws and then remove the case.

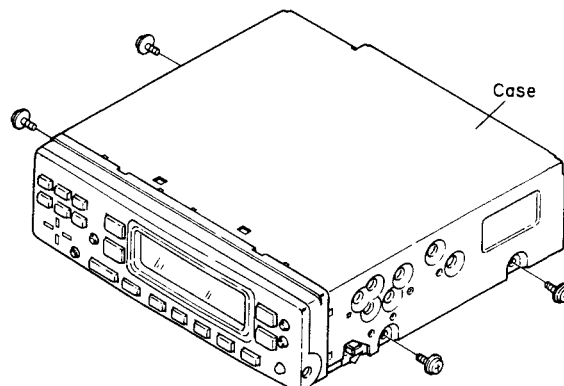


Fig. 1

### ● Cassette Mechanism Assy

1. Remove the four screws.
2. Disconnect the P.C. board unit connector.
3. Remove the cassette mechanism assy.

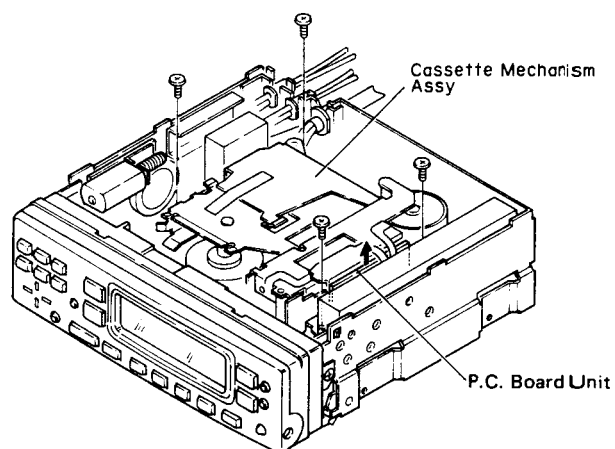


Fig. 2

### ● Grille Assy

1. Open the front panel.
2. While holding down the lock button, pull the grille assy. toward you.

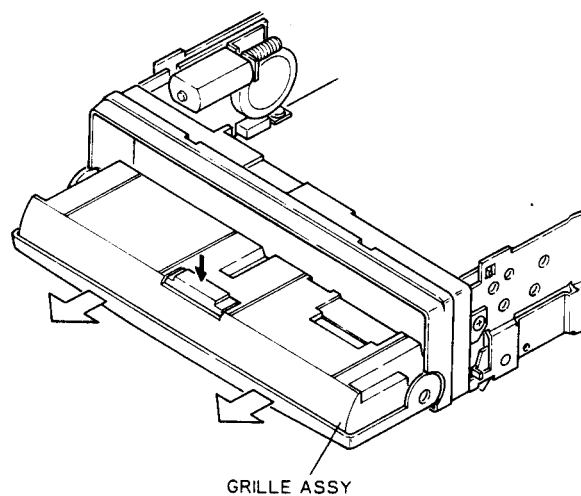


Fig. 3



### ● Panel Assy

1. Remove the three screws.
2. Disconnect the five connectors.
3. Press the tabs at four locations indicated by arrows, and then remove the panel assy.

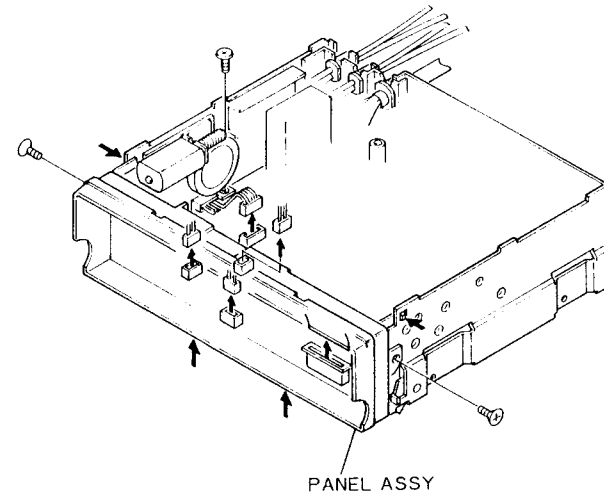


Fig. 4

### ● Chassis Unit

1. Remove the three screws.
2. Unbend the tabs indicated by arrow until straight.
3. Remove the chassis unit.

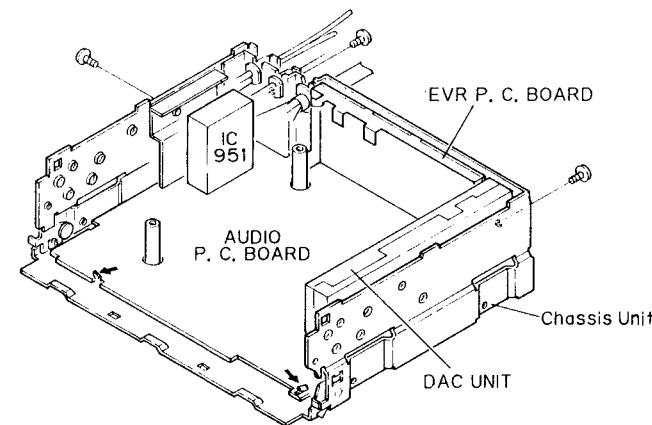


Fig. 5

### ● Control P.C. Board

1. Remove the three screws A, and then remove the cover unit.
2. Remove the three screws B, holder, and then disconnect the two connectors.
3. Remove the control P.C. board.

### ● LCD Unit

1. Remove the five screws C, and then remove the LCD unit.

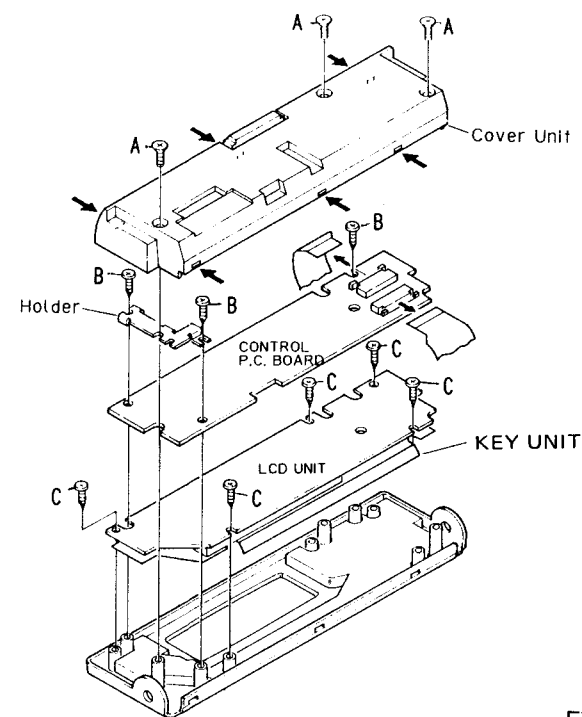


Fig. 6

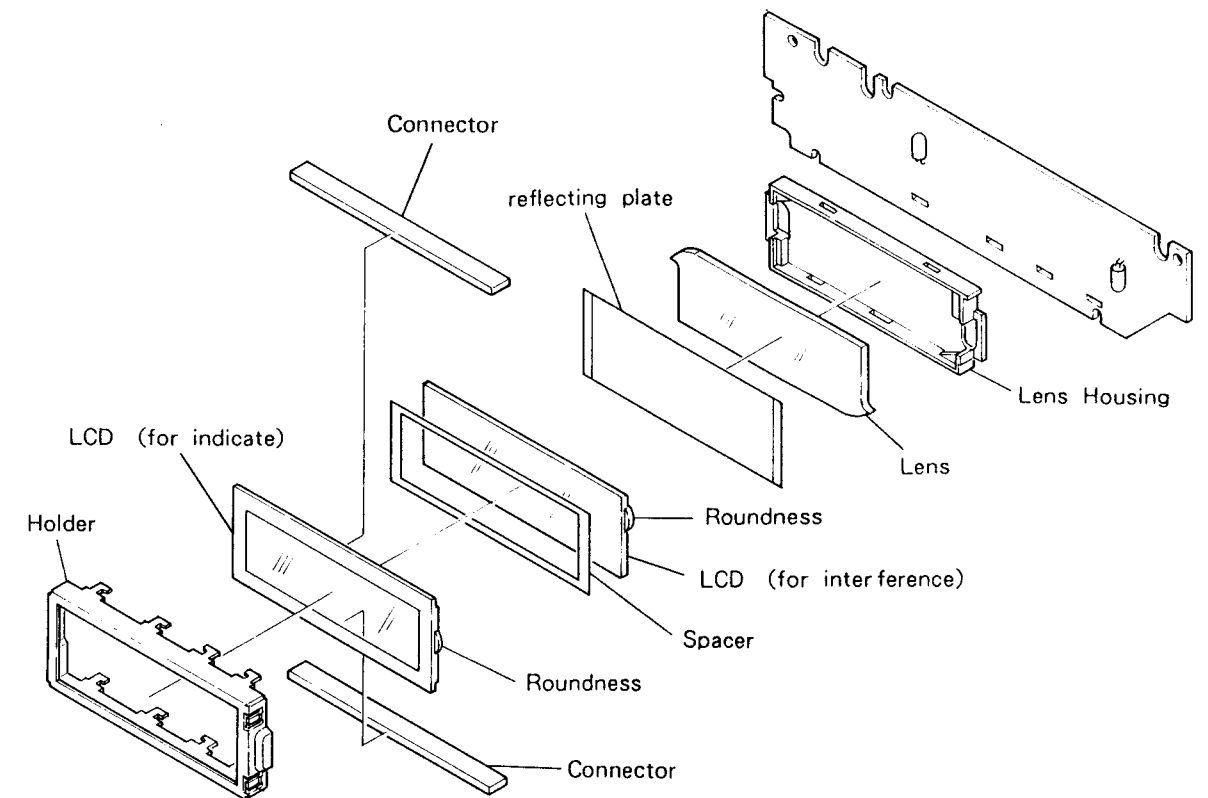


Fig. 7

### ● Notes for Assembling the LCD Unit

This unit is equipped with two LCDs (one for display and the other for interference).

When assembling the LCD unit, align the LCDs as shown in the figure. Place the LCDs on top of each other so the interference LCD becomes dark (try reversing the LCD).

Matching the board and the LCDs

1. When disassembling the LCD unit, make sure to replace the connector with a new one.
2. Match the LCDs and the board with the power turned on.

Press the LCDs and the board against each other, and confirm that there is no faulty contact, and then bend the holder claw and solder it.

In case of faulty contact

1. Reverse the connector.
2. Exchange the two connector against each other.

5. CIRCUIT DESCRIPTION

● Block Diagram

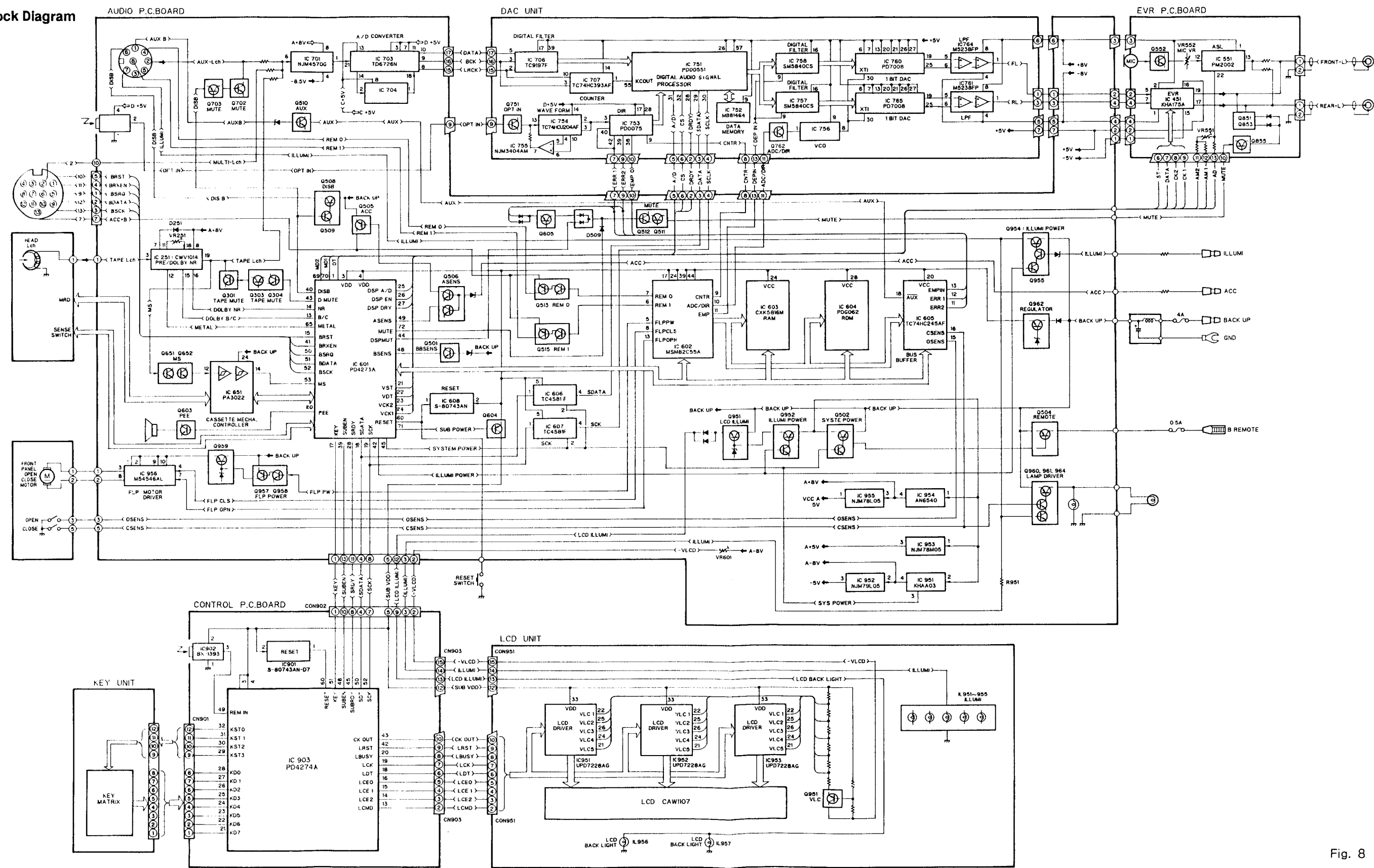


Fig. 8

### ● LCD Driver

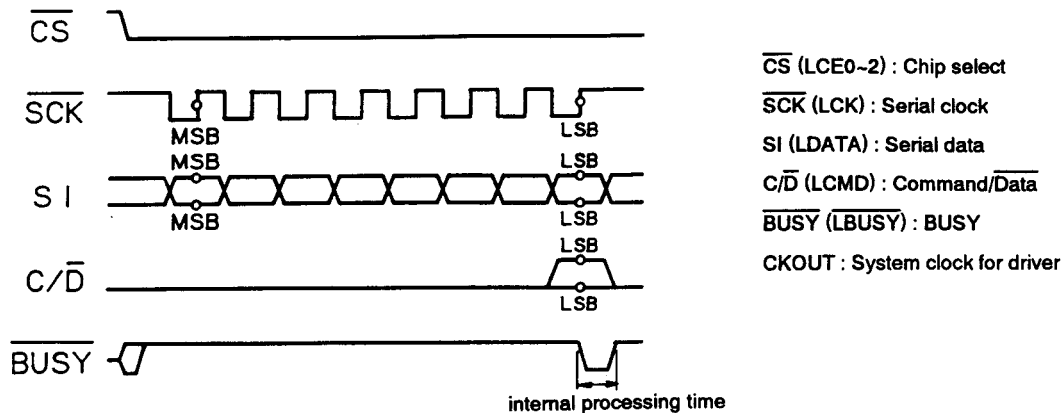


Fig. 9 Serial input timing

After turning on the IC903 (PD4274) key microprocessor, CS is set to 'L' and LCMD to 'H' (command assignment) to send initial data such as frame frequency etc. to IC951-953 (UPD7228G). Then, the command data and clock pulse are sent.

After the data is received, UPD7228G  $\overline{\text{LBUSY}}$  is set to 'L' and internal processing is performed. Then, it changes back to 'H' so RDY condition is set.

Next, when sending the display data, LCMD is set to 'L' (data assignment) and the same processing as above is performed.

KEX-M900 uses three LCD drivers (UPD7228G). The driver for communication is selected by LCE0 to 2 to perform the operation described above.

However, if after reception of data  $\overline{\text{BUSY}}$  is not set to 'L' for some reason, a communication error occurs and LRSET is output to restart from initialisation.

### ● DSP (Digital Signal Processor)

For communication between IC601 (PD4273) and IC751 (PD00551, DSP), CK and DATA are shared with the key micro processor IC903. Therefore,  $\overline{\text{DSPEN}}$  (CS) becomes 'L' to enable communication of DSP DATA and CK. Then, CK sets RDY to 'L' (BUSY state), after which the data is received, and DSPEN and DSPRDY rise to 'H' to complete the transmission.

In case RDY does not become 'H' after data reception, an abnormality is determined and DSPRESET is applied.

If RDY remains 'L' even DSPRESET is applied repeatedly, DSPMUTE is applied. Data is sent in the form of 8 bits several times according to control specifications.

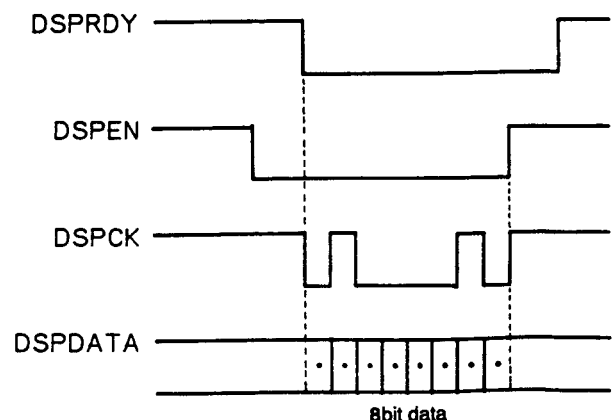


Fig. 10

### ● Electronic Volume

This unit is equipped with two ICs (front and rear) inside IC451 (EVR). CK is divided into two branches (CK1, CK2), with common VDT and VST.

VCK1 and VDATA for E-VOL (front) are output and latched inside E-VOL. Next, VCK2 and VDATA for E-VOL (for rear) are output and latched inside E-VOL in the same manner as above, then VST is output to operate front and rear E-VOL simultaneously.

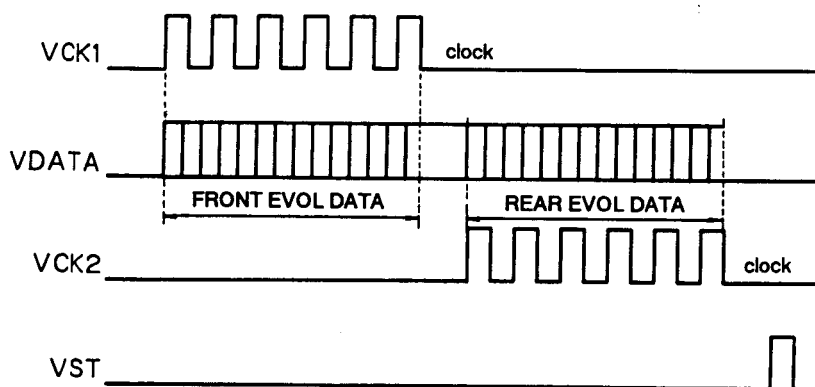


Fig. 11

### ● Digital Audio Signal Flow (Fig. 12)

- ① To improve the performance of the LPF in the previous stage and the S/N ratio, sampling is performed with  $2f_s$ .
- ② The data sampled with  $2f_s$  is reconverted to  $f_s$ .
- ③ Necessary informations such as LRCK, BCK and DATA etc. are sampled by IC753 (PD0075) from the digital input format (CP340).
- ④ AD and OPT data from 2 and 3 is written in and read out from the DRAM (MB81464) each time and processed for delay etc. by the DSP.

To achieve a S/N ratio similar to a 16 bit DAC system, the 1 bit DAC system performs 8 times over-sampling of the input at ⑤, after which noise shaping is performed in PD7008 at the next stage, whereby noise is pushed out of the audio range and the S/N ratio is improved. Finally, the data is PWM processed and output.

After passing the 3rd stage LPF ⑥ the audio signal is obtained.

## Digital Audio Signal Flow

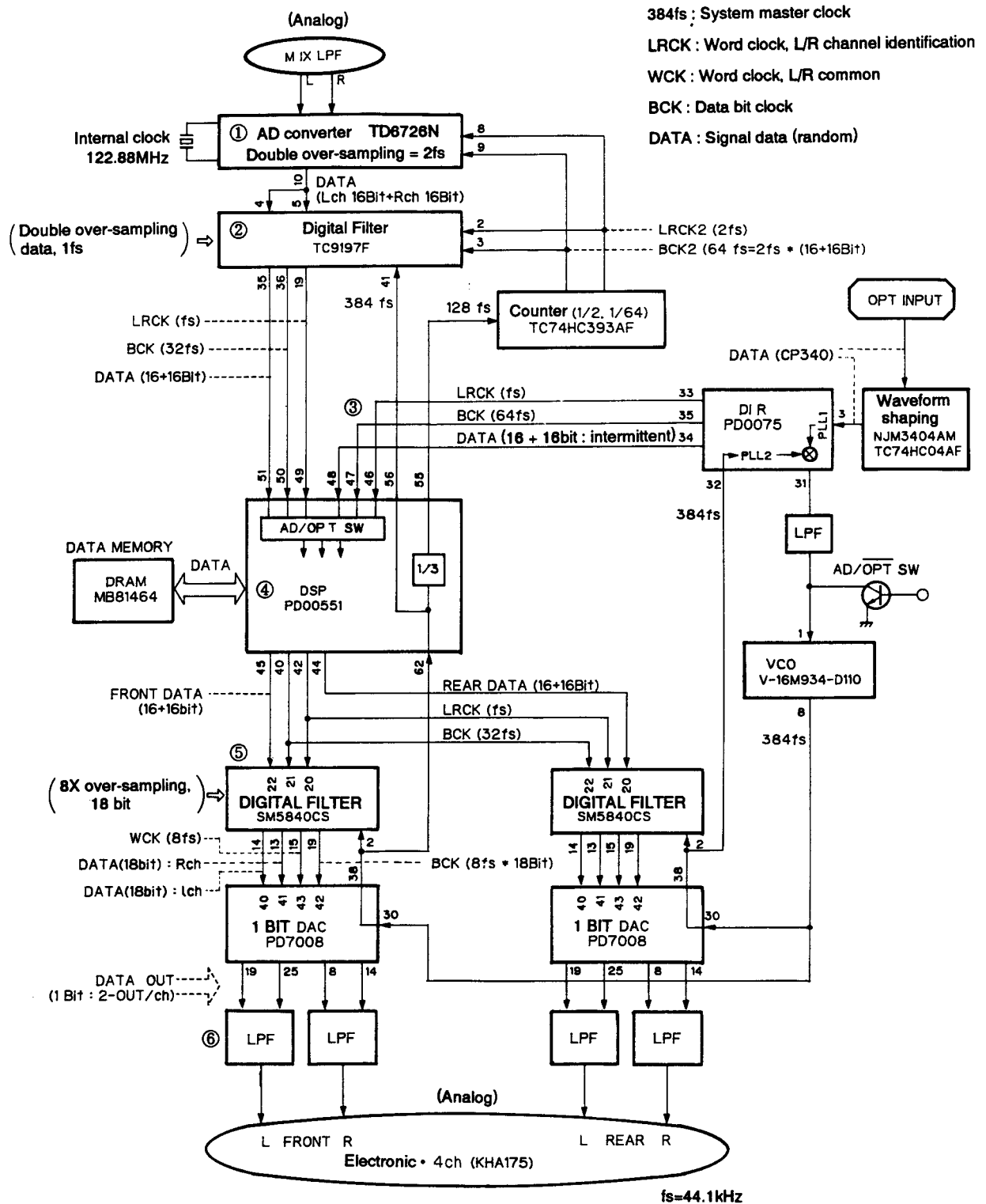


Fig. 12

## 6. ADJUSTMENT

### TEST MODE

Test mode is mainly used in adjustment of CD multi-players (such as CDX-M50).

- Switching to test mode

While pressing the F1, VOL – keys together, switch the back-up ON or release the clear button.

- Canceling test mode

Press the CD multi-player clear button, and then the KEX-M900 clear button. Or, switch the CD multi-player and KEX-M900 back-up OFF.

- Key functions during test mode

The CD multi-player, deck, and tuner are selected by the **SRCE** key.

#### a)CD multi-player

Key	Function
BAND/REL	Regulator ON/OFF
FWD	FWD kick
REV	REV kick
F1	Tracking close
F4	Tracking open
F2	Focus close
F3	Carriage/tracking switching

#### b)DECK, TUNER

No corresponding function. Normal operation executed.

**DOLBY NR ADJUSTMENT**

No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz, 200nwb/m)	VR251 (Lch) VR252 (Rch)	mV Meter : - 6dBs (+1.5dB, - 0.5dB) (DOLBY NR Switch : OFF)


**CLOCK ADJUSTMENT**

No.	Adjusting Point	Adjustment Method
1		Connect Pin 30 (DB6) and Pin 34 (DB3) of IC601 to Pin 64 (KST0).
2		Back-up ON or press the clear button.
3	TC601	Frequency Counter : 1048576Hz $\pm$ 2Hz

**A/D CONVERTER ADJUSTMENT**

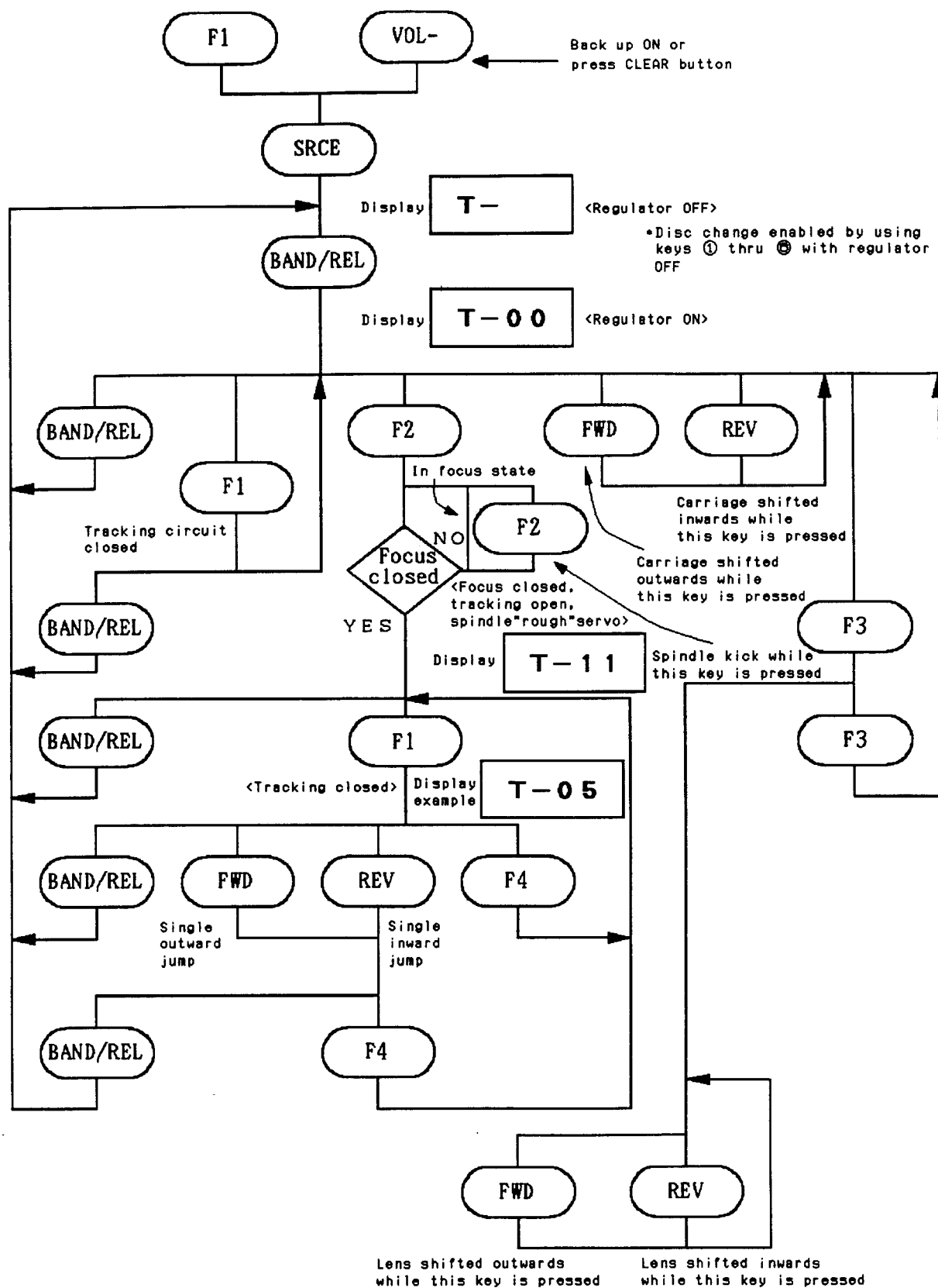
No.	Adjusting Point	Adjustment Method
1		Input the DC zero signal (ground the input) as analog signal.
2	VR706 (Lch) VR705 (Rch)	Adjust so that the lower side of the output waveform of Pin 19 (Lch) and Pin 27 (Rch) of IC703 becomes -0.7V.
3	VR701 (Lch) VR702 (Rch)	DC V Meter (1), (2) : Approx. -2V
4	VR703 (Lch) VR704 (Rch)	Set the volume to step 29, and input the 1kHz signal from the oscillator. Adjust so that the waveform clipping is symmetrical for upper and lower part.
5	VR701 (Lch) VR702 (Rch)	Reduce the signal output level so that the waveform does not clip, and adjust so that the distortion ratio becomes minimum.
6		Repeat No. 4 and No. 5 and adjust so that the waveform clipping is symmetrical for the upper and lower part, and the distortion ratio becomes minimum.

**\*LCD ADJUSTMENT**

No.	Adjusting Point	Adjustment Method
1		Select the disc title input mode.
2		Observe the part where black and white is inverted from the front.
3	VR601	Adjust so that dots are not flickering.  

\* The grille assembly and the main unit are adjusted to match prior to shipping, so make sure to readjust when the grille assembly and the main unit combination is changed.

## • Flow Chart





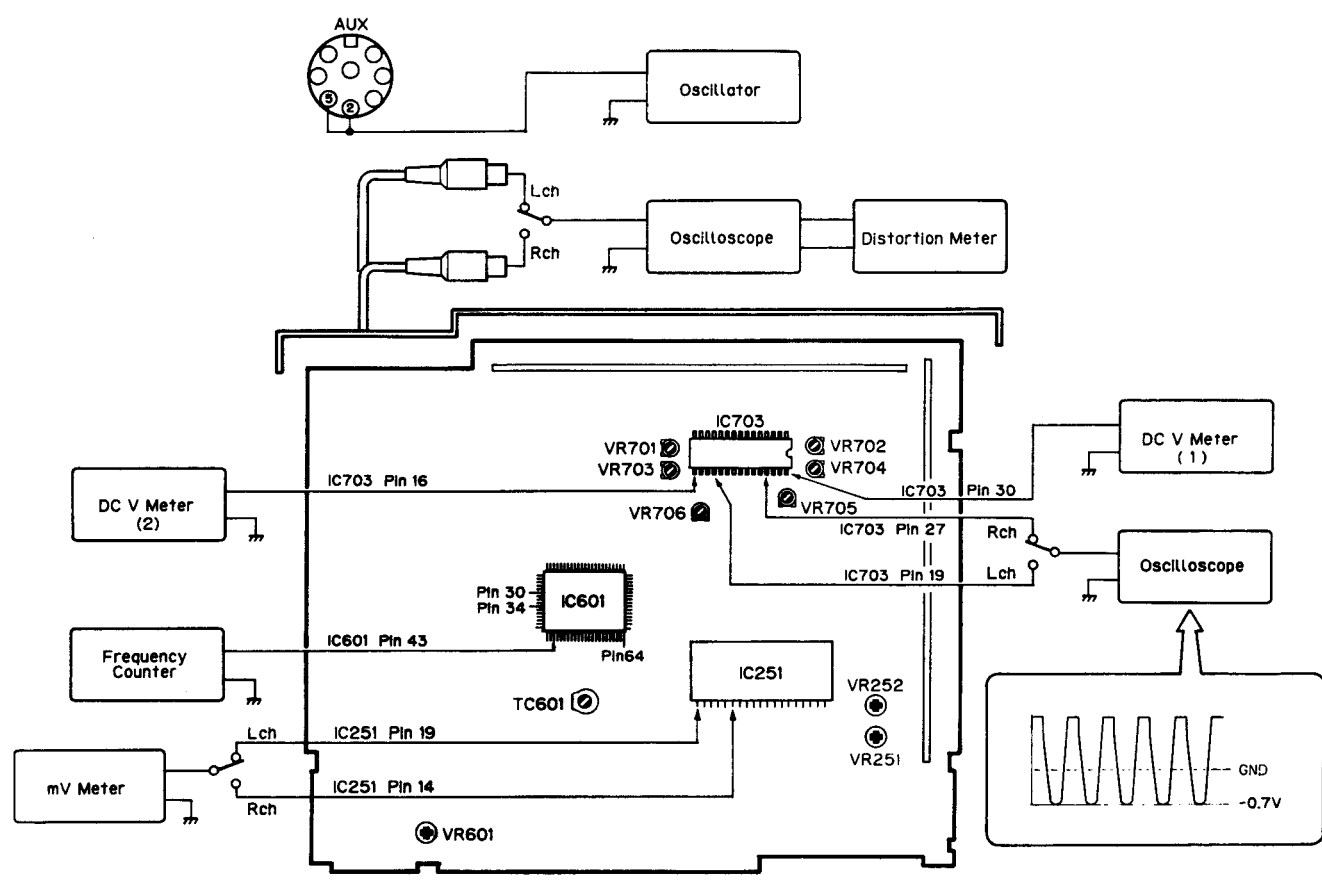
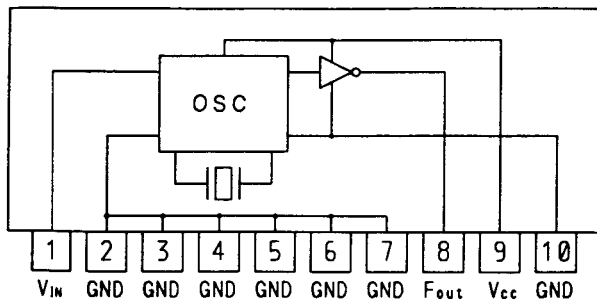


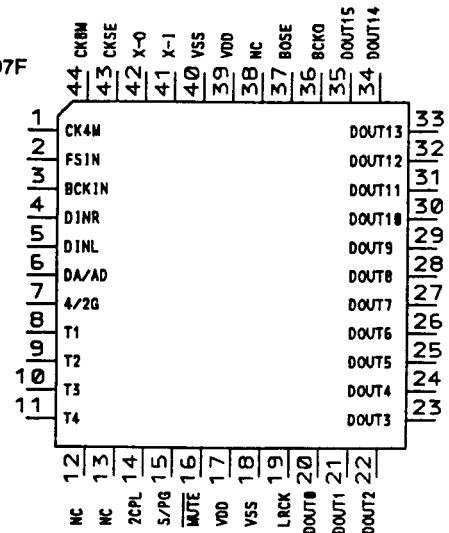
Fig. 13

● ICs

V-16M934-D110



TC9197F

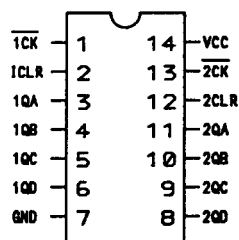


● Pin Functions (TC9197F)

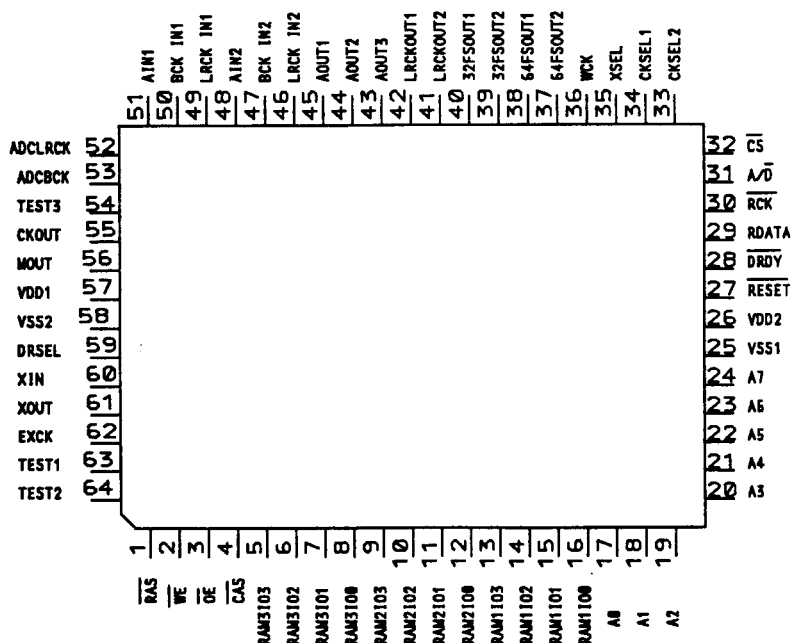
Pin	Pin Name	I/O	Function and Operation
1	CK4M	O	4M clock pulse output terminal
2	FSIN	I	Input data sampling clock pulse input terminal
3	BCKIN	I	Bit clock pulse input terminal
4	DINR	I	Rch data input terminal for L/R parallel input
5	DINL	I	Lch data input terminal for L/R parallel input
6	DA/AD	I	DA/AD mode select terminal
7	4/2G	I	Conversion ratio select terminal for sampling frequency
8	T1	I	Test terminal
9	T2	I	
11	T4	I	
12	NC		
13	NC		
14	2CPL	I	2's complement offset binary select terminal
15	S/PG	I	Serial/parallel mode select terminal
16	MUTE	I	Muting control terminal
17	VDD		
18	VSS		Ground
19	LRCK	O	Channel clock pulse output terminal
20	DOUT0	O	Data 0 (LSB) output terminal for 16 bit parallel output
21	DOUT1	O	Data output terminal for 16 bit parallel output
34	DOUT14		
35	DOUT15		
36	BCKO	O	Bit clock pulse output terminal
37	BOSE	I	Bit clock pulse select terminal
38	NC		
39	VDD		
40	VSS		Ground
41	X-I	I	Crystal oscillator connection terminal
42	X-O	O	Crystal oscillator connection terminal
43	CKSE	I	Clock pulse select terminal
44	CK8M	O	CK8M clock pulse output terminal

TC74HC393AF

\*PD00551



IC's marked by \* are MOS type.  
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

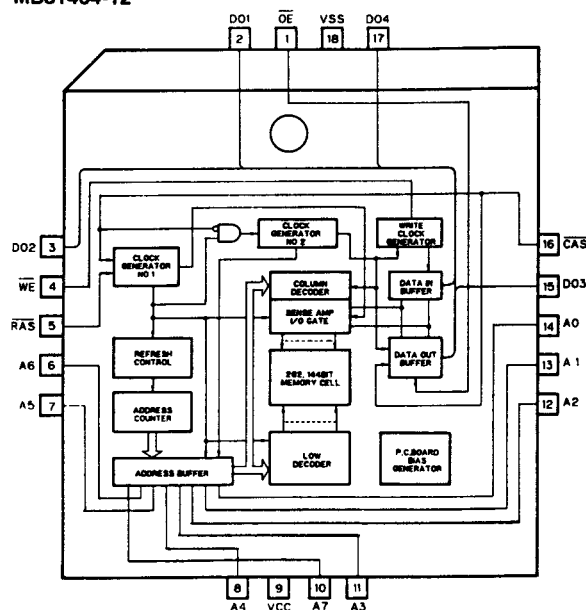


### ● Pin Functions (PD00551)

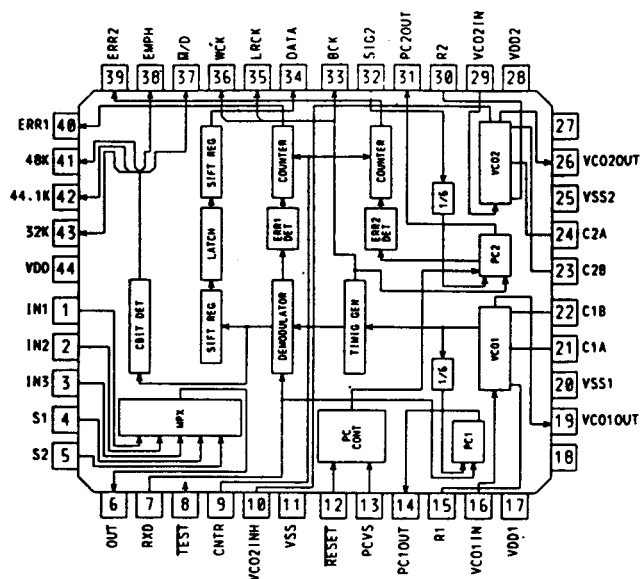
Pin	Pin Name	I/O	Function and Operation
1	$\overline{\text{RAS}}$	O	Low address strobe terminal for external DRAM
2	$\overline{\text{WE}}$	O	Write enable terminal for external DRAM
3	$\overline{\text{OE}}$	O	Output enable terminal for external DRAM
4	$\overline{\text{CAS}}$	O	Column address strobe terminal for external DRAM
5 7 8	RAM3IO3 : RAM3IO0	I/O	Data I/O terminal for external DRAM
9 11 12	RAM2IO3 : RAM2IO0	I/O	Data I/O terminal for external DRAM
13 15 16	RAM1IO3 : RAM1IO0	I/O	Data I/O terminal for external DRAM
17 24	A0 : A7	O	Address output terminal for external DRAM
25	VSS1		Ground terminal
26	VDD2		Power supply terminal
27	RESET	I	Reset signal input terminal
28	DRDY	O	Micro processor I/F data reception enable output terminal
29	RDATA	I	Micro processor I/F data input terminal
30	RCK	I	Micro processor I/F clock pulse input terminal

Pin	Pin Name	I/O	Function and Operation
31	A $\overline{D}$	I	Micro processor I/F address data discrimination input terminal
32	$\overline{CS}$	I	DASP chip select input terminal
33	CKSEL2	I	Select terminal for clock pulse output from CKOUT
34	CKSEL1	I	Select terminal for master clock pulse frequency
35	XSEL	I	Select terminal for oscillation/external clock pulse
36	WCK	O	Word clock pulse output terminal
37	64FSOUT2	O	64FS bit clock pulse output terminal
38	64FSOUT1		
39	32FSOUT2	O	32FS bit clock pulse output terminal
40	32FSOUT1		
41	LRCKOUT2	O	LR clock pulse output terminal
42	LRCKOUT1		
43 44 45	AOUT3 AOUT2 AOUT1	O	Lch, Rch audio serial data output terminal
46	LRCKIN2	I	LR clock pulse input terminal 2 for reading in audio serial data
47	BCKIN2	I	Bit clock pulse input terminal 2 for reading in audio serial data
48	AIN2	I	Lch, Rch audio serial data input terminal 2
49	LRCKIN1	I	LR clock pulse input terminal 1 for reading in audio serial data
50	BCKIN1	I	Bit clock pulse input terminal 1 for reading in audio serial data
51	AIN1	I	Lch, Rch audio serial data input terminal 1
52	ADCLRCK	O	LR clock pulse output terminal to A/D converter
53	ADCBCK	O	Bit clock pulse output terminal to A/D converter
54	TEST3	I	Test mode terminal
55	CKOUT	O	Internal system clock pulse or master clock pulse 3/2 division output terminal
56	MOUT	O	Master clock pulse output terminal
57	VDD1		Power supply
58	VSS2		Ground
59	DRSEL	I	DRDY logic select terminal
60	XIN	I	Crystal oscillator connection terminal
61	XOUT	O	Crystal oscillator connection terminal
62	EXCK	I	External clock pulse input
63	TEST1	I	Test mode terminal
64	TEST2	I	Test mode terminal

MB81484-12



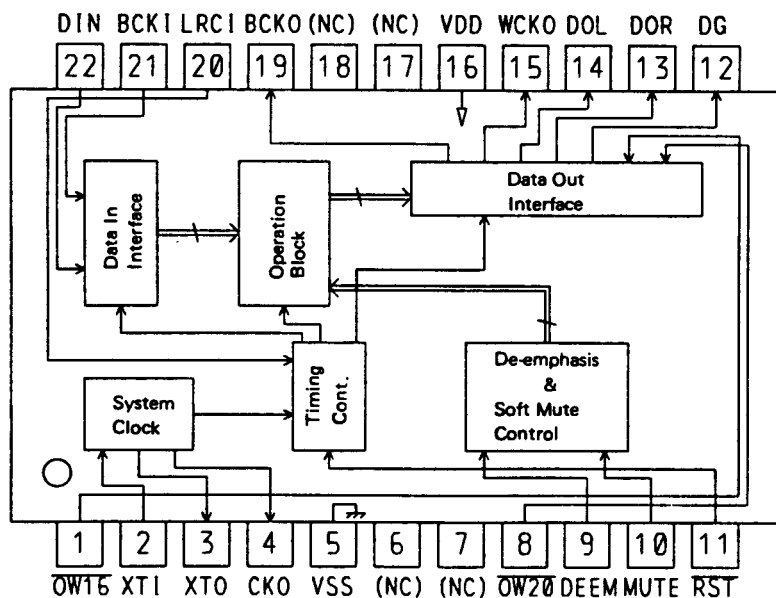
\*PD0075



### ● Pin Functions (PD0075)

Pin No.	Pin Name	I/O	Function and Operation	
1	IN1	Input	Data input 1.	Digital audio data input of EIAJ format. (TTL level)
2	IN2	Input	Data input 2.	
3	IN3	Input	Data input 3.	
4	S1	Input	Input selector 1. (TTL level)	
5	S2	Input	Input selector 2. (TTL level)	
6	OUT	Output	Data MPX output.	
7	RXD	Input	Data input. Normally connected to OUT (CMOS level).	
8	TEST	Input	Test mode input. Normally fixed at "H". (TTL level)	
9	CNTR	Input	Counter clock input for ERR1/2 output time (CMOS level).	
10	VCO2INH	Input	For VCO2 oscillation stop. Oscillation stop at "H". (TTL level)	
11	VSS		Logic VSS.	
12	RESET	Input	Power ON reset input.	
13	PCVS	Input	VCO1/2 self-run frequency setting input.	
14	PC1OUT	Output	Phase comparator 1 output.	
15	R1		VCO1 regulating resistor connection terminal.	
16	VCO1IN	Input	VCO1 control voltage input.	
17	VDD1		VCO1 VDD.	
18			Not used.	
19	VCO1OUT	Output	VCO1 output. (384fs)	
20	VSS1		VCO1 VSS.	
21	C1A		VCO1 regulating capacity connection terminal.	
22	C1B		VCO1 regulating capacity connection terminal.	
23	C2B		VCO2 regulating capacity connection terminal.	
24	C2A		VCO2 regulating capacity connection terminal.	
25	VSS2		VCO2 VSS.	
26	VCO2OUT	Output	VCO2 output. (384fs)	
27			Not used.	

Pin No.	Pin Name	I/O	Function and Operation
28	VDD2		VC02 VDD.
29	VC02IN		VC02 control voltage input.
30	R2		VC02 regulating resistor connectin terminal.
31	PC2OUT	Output	Phase comparator 2 output.
32	SIG2	Input	V input of phase comparator 2. Normally connected to VC02OUT.
33	BCK	Output	Demodulation data bit clock output.
34	DATA	Output	Demodulation audio data output.
35	LRCK	Output	Demodulation data L/R channel output. L channel at "H".
36	WCK	Output	Demodulation data word clock output.
37	M/D	Output	MUSIC/DATA selection information output. MUSIC at "L"
38	EMPH	Output	Emphasis information output. With emphasis at "H".
39	ERR2	Output	2nd PLL UNLOCK output. UNLOCK at "H".
40	ERR1	Output	1st PLL data read error output. Error at "H".
41	48K	Output	Sampling frequency information output. Open drain for LED driver. Active at "L".
42	44.1K	Output	Sampling frequency information output. Open drain for LED driver. Active at "L".
43	32K	Output	Sampling frequency information output. Open drain for LED driver. Active at "L".
44	VDD		Logic VDD.

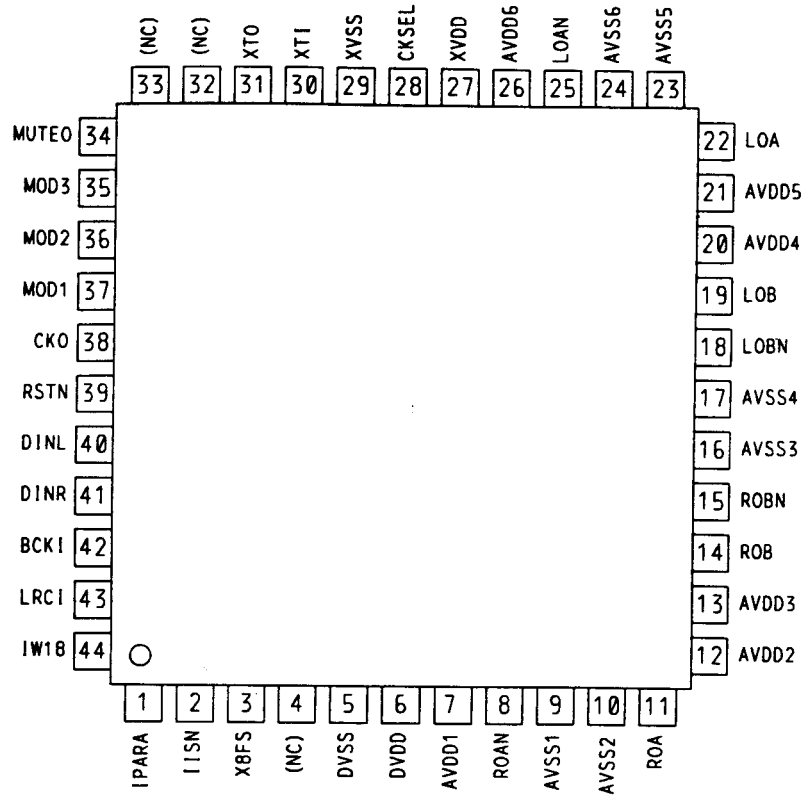
**SM5840CS**


# ● Pin Functions (SM5840CS)

In the explanation, <fs> means the sampling frequency of input data.

Pin No.	Pin Name	I/O	Function and Operation															
1	OW16	Input	Output bit number selection terminal. <table border="1"> <tr> <th colspan="2">Setting</th><th colspan="2">OW20</th></tr> <tr> <th colspan="2"></th><th>H</th><th>L</th></tr> <tr> <th rowspan="2">OW16</th><th>H</th><td>18bit output (NS-ON)</td><td>20bit output (NS-ON)</td></tr> <tr> <th>L</th><td>16bit output (NS-ON)</td><td>18bit output (NS-OFF)</td></tr> </table> <div style="margin-top: 10px;"> <b>Note:</b>            NS-ON Noise shaper ON            NS-OFF Noise shaper OFF            (test mode)         </div>	Setting		OW20				H	L	OW16	H	18bit output (NS-ON)	20bit output (NS-ON)	L	16bit output (NS-ON)	18bit output (NS-OFF)
Setting		OW20																
		H	L															
OW16	H	18bit output (NS-ON)	20bit output (NS-ON)															
	L	16bit output (NS-ON)	18bit output (NS-OFF)															
2	XT1	Input	Oscillator input terminal.															
3	XT0	Output	Oscillator output terminal.															
4	CK0	Output	Oscillator output clock (frequency same as for XT1 terminal)															
5	VSS		GND															
6, 7	NC																	
8	OW20	Input	Output bit number selection terminal 2. (20 bit for OW20=L) (18 bit for OW20=H)															
9	DEEM	Input	De-emphasis signal input. (De-emphasis OFF for DEEM=L) (De-emphasis ON for DEEM=H)															
10	MUTE	Input	Mute signal input. (Soft mute OFF for MUTE=L) (Soft mute ON for MUTE=H)															
11	RST	Input	System reset (initialize)															
12	DG	Output	Digridge output.															
13	DOR	Output	Rch data output.															
14	DOL	Output	Lch data output.															
15	WCK0	Output	Output word clock.															
16	VDD		VDD (5V)															
17, 18	NC																	
19	BCK0	Output	Output bit clock.															
20	LRCI	Input	Input data sample rate (fs) clock.															
21	BCKI	Input	Input bit clock.															
22	DIN	Input	Input data.															

\*PD7008



● Pin Functions (PD7008)

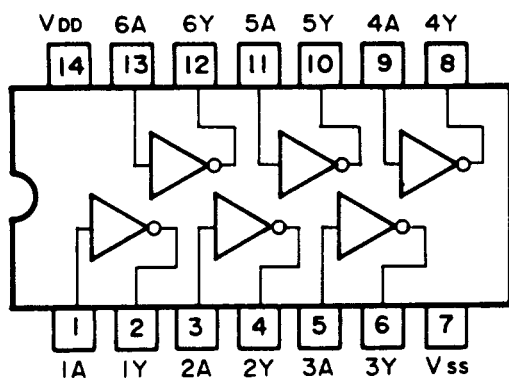
Pin No.	Pin Name	I/O	Function and Operation
1	IPARA	Input	Input data word timing selection. H(or open):Lch/Rch parallel input. L:Lch/Rch alternate input.
2	IISN	Input	IIS input mode selection. H(or open):Normal input mode. L:IIS input mode.
3	X8SF	Input	Input data sample frequency selection. H(or open):8xfs input mode. L:4xfs input mode.
4	NC		
5	DVSS		Digital GND.
6	DVDD		Digital power supply (5V).
7	AVDD1		Analog power supply (5V) 1.
8	ROAN	Output	Data output. PWM output (Rch A reverse phase)
9	AVSS1		Analog GND 1.
10	AVSS2		Analog GND 2.
11	ROA	Output	Data output. PWM output (Rch A normal phase)
12	AVDD2		Analog power supply (5V) 2.
13	AVDD3		Analog power supply (5V) 3.
14	ROB	Output	Data output. PWM output (Rch B normal phase)
15	ROBN	Output	Data output. PWM output (Rch B reverse phase)
16	AVSS3		Analog GND 3.
17	AVSS4		Analog GND 4.
18	LOBN	Output	Data output. PWM output (Lch B reverse phase)
19	LOB	Output	Data output. PWM output (Lch B normal phase)
20	AVDD4		Analog power supply (5V) 4.
21	AVDD5		Analog power supply (5V) 5.



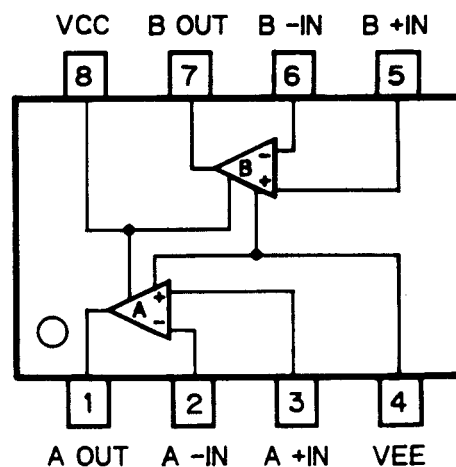
Pin No.	Pin Name	I/O	Function and Operation
22	LOA	Output	Data output. PWM output(Lch A normal phase)
23	AVSS5		Analog GND 5.
24	AVSS6		Analog GND 6.
25	LOAN	Output	
26	AVDD6		Analog power supply(5V) 6.
27	XVDD		Clock power supply(5V).
28	CKSEL	Input	L level fixing input.
29	XVSS		Clock GND.
30	XTI	Input	X'tal connection terminal/external clock input terminal.
31	XTO	Output	X'tal connection terminal.
32, 33	NC		
34	MUTE0	Output	Muting output.
35   37	MOD3   MOD1	Input	Selection of combination between system clock input frequency and noise shaper operation frequency.
38	CKO	Output	256fs/384fs clock output.
39	RSTN	Input	Reset input.
40	DINL	Input	Lch serial data input.
41	DINR	Input	Rch serial data input.
42	BCKI	Input	Serial input data bit clock(data loading at rise edge).
43	LRCI	Input	Input data sample frequency clock.
44	IW18	Input	Input data word length selection. H(or open):18 bit length. L:16 bit length.

In the explanation, <fs> means the sample frequency (44.1kHz for CD) of the raw signal data.

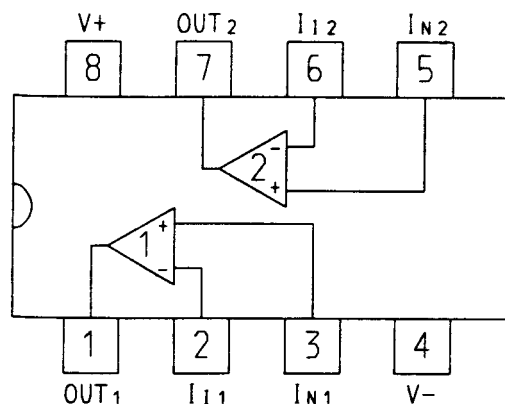
TC74HCU04AF



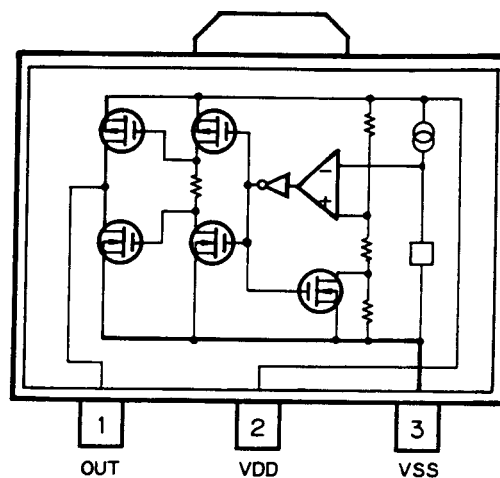
NJM3404AM



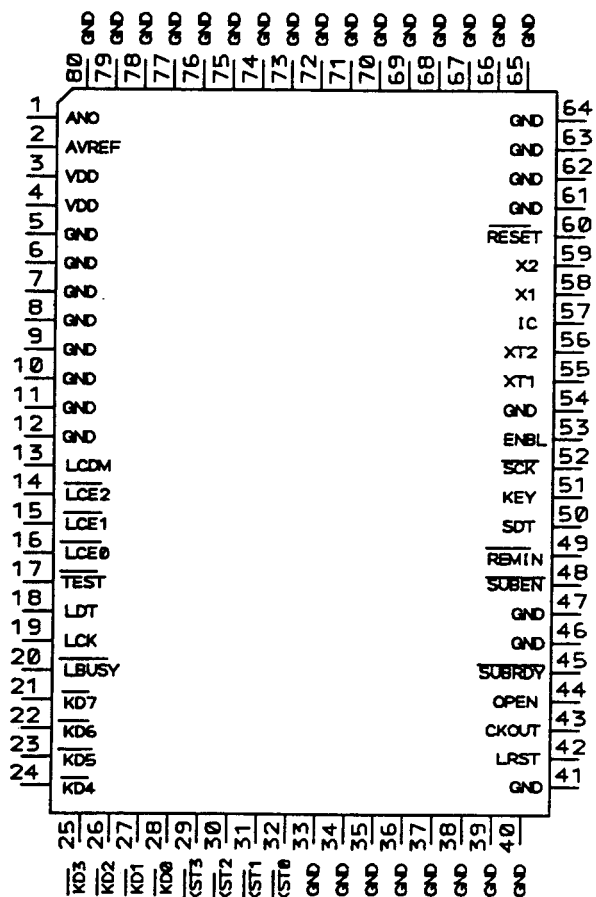
M5238FP



S-80743AN-D7



\*PD4274A

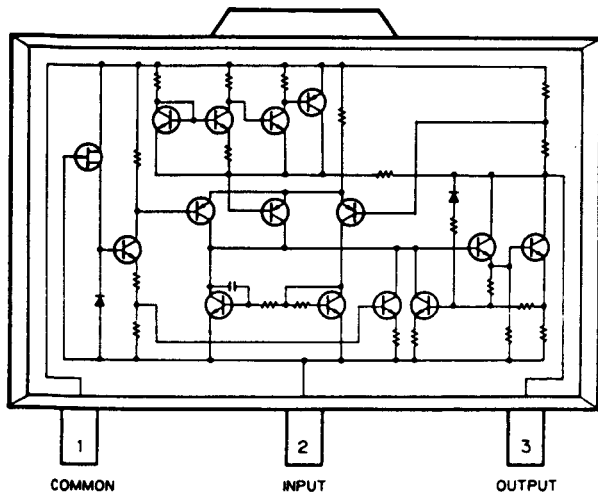


## ● Pin Functions (PD4274A)

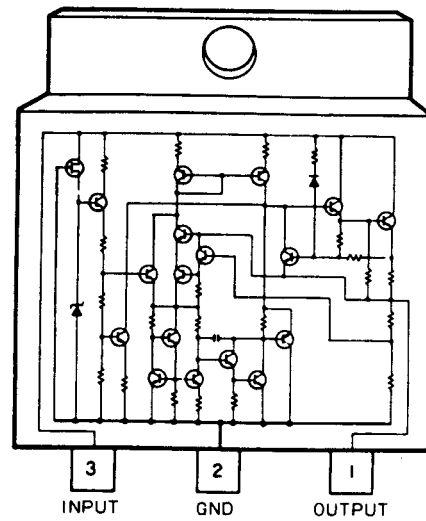
Pin	Pin name	I/O	Output Format	Function and Operation
1	ANO			Connect to GND.
2	AVREF			Connect to GND.
3, 4	VDD			VDD
5-12				Connect to GND.
13	LCDM	output	C	LCD controller command/data appointment output.
14	LCE2	output	C	LCD controller chip select output.
16	LCE0			
17	TEST			Test program.
18	LDT	output	C	LCD controller serial data output.
19	LCK	output	C	LCD controller serial clock output.
20	LBUSY	input		LCD controller BUSY input.
21	KD7	input		Key data return input.
28	KD0			
29	KST3	output	NM	Key data strobe output.
32	KST0			
33	GND			GND
33-41				Connect to GND.
42	LRST	output	C	LCD controller reset output.
43	CLKOUT	output	C	LCD controller clock output.
44				Open
45	SUBRDY	input		Communication ready input.
46, 47				Connect to GND.
48	SUBEN	input		Communication request output.
49	REMIN	input		Remote control input.
50	SDT	input		Serial data input.
51	KEY	output	C	Serial data output.
52	SCK	output	C	Serial clock.
53	ENBL			Test program enable.
54	GND			GND
55	XT1			Connect to GND.
56	XT2			Open
57	IC			Connect to GND.
58	X1			X'tal connection terminal.
59	X2			
60	RESET	input		Reset input.
61-80				Connect to GND.

Output Format	Meaning
C	C-MOS
NM	Neutral resistivity N channel open drain

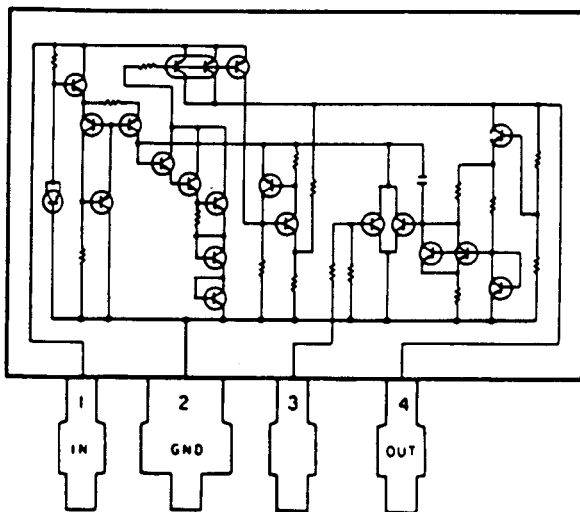
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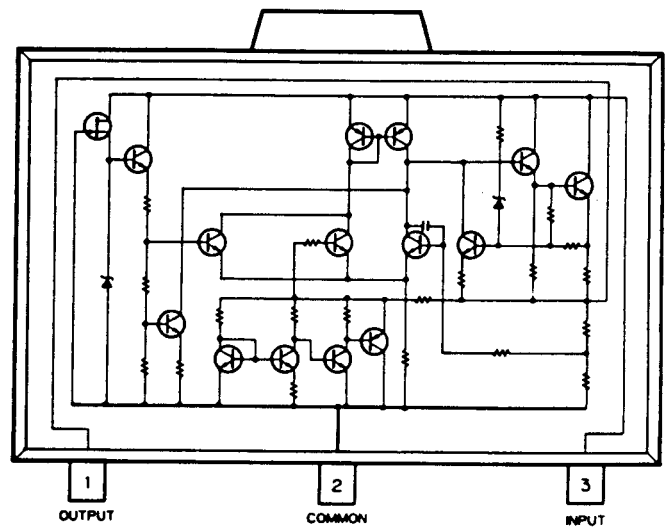
NJM78M05A



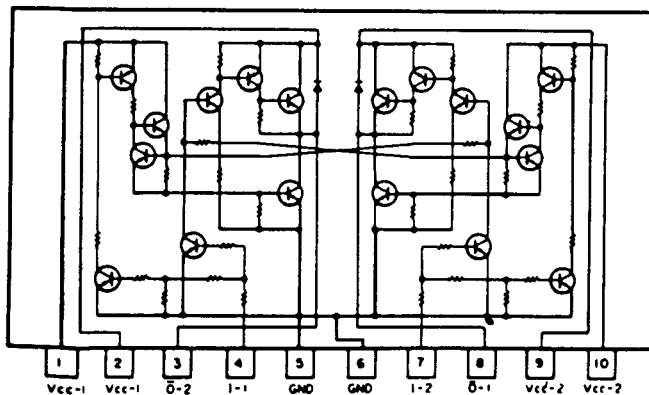
AN6540



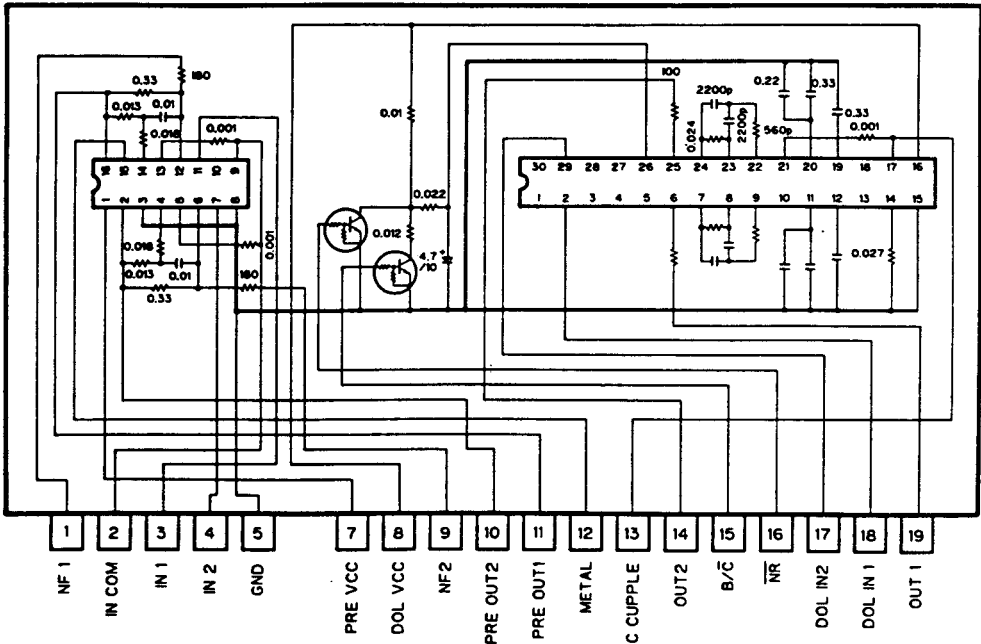
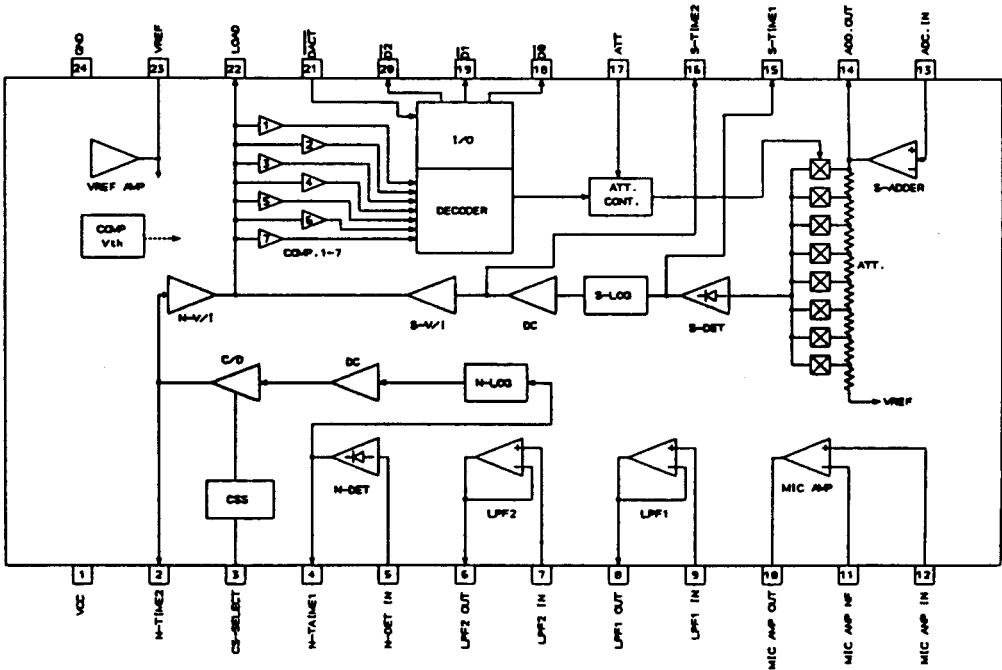
NJM78L05UA



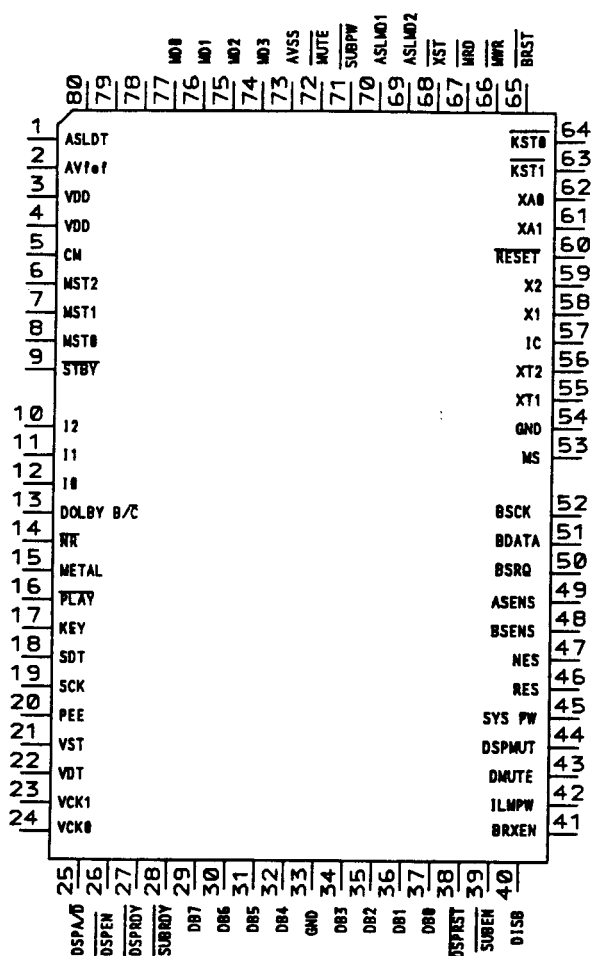
M54548AL



**CWV1014**

**PM2002**

\*PD4273A



### ● Pin Functions (PD4273A)

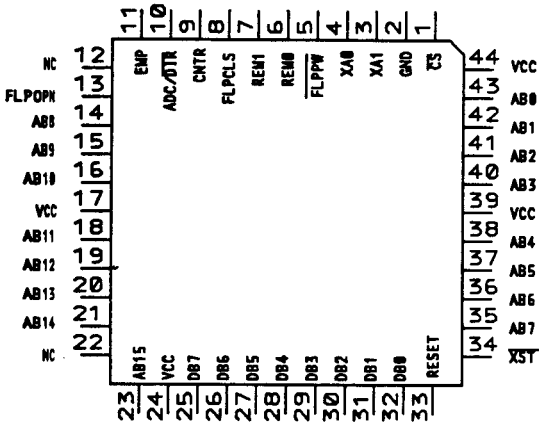
Pin	Pin name	I/O	Output Format	Function and Operation
1	ASLDT	input		ASL data input.
2	AVREF			A/D converter reference voltage.
3	VDD			VDD
4	VDD			
5	CM	output	C	CM control output.
6	MST2	output	C	Mechanism switch strobe output.
7	I			
8	MST0			
9	STBY1	output	C	PA3022 stand-by control.
10	I2	output	C	PA3022 control data.
11	I			
12	I0			
13	DLBYBC	output	C	Dolby NR B/C switching
14	NR	output	C	Noise reduction output.
15	METAL	output	C	Metal output.

Pin	Pin name	I/O	Output Format	Function
16	PLAY	output	C	MS filter switching.
17	KEY	input		Serial data input.
18	SDT	output	C	Serial data output.
19	SCK			Serial clock.
20	PEE	output	C	Buzzer On output.
21	VST	output	C	E-VOL strobe output.
22	VDT	output	C	E-VOL data output.
23	VCK1	output	C	E-VOL clock output (rear).
24	VCK0	output	C	E-VOL clock output (front).
25	DSPA/D	output	C	DSP address/data switching output.
26	DSPEN	output	C	DSP chip enable output.
27	DSPRDY	input		DSP ready input.
28	SUBRDY	input		Communication ready input.
29   32	DB7   DB4	input/ output	NM	Memory data input/output.
33	GND			GND
34   37	DB3   DB0	input/ output	NM	Memory data input/output.
38	DSPRST	output	C	DSP reset output.
39	SUBEN	output	C	Communication request output.
40	DISB	output	C	AUX control output.
41	BRXEN	input/ output	C	BUS reception enable.
42	ILMPW	output	C	Illumination power output.
43	DMUTE	output	C	Deck mute output.
44	DSPMUT	output	C	DSP mute output.
45	SYSPW	output	C	System power output.
46	RES	input		Reel pulse detector input-reverse.
47	NES	input		Reel pulse detector input-forward.
48	BSENS	input		BACK-UP +B sensor input.
49	ASENS	input		ACC +B sensor input.
50	BSRQ	input		BUS polling request input.
51	BDATA			BUS serial data.
52	BSCK			BUS serial clock.
53	MS	input		MS pulse input.
54	GND			GND
55	XT1			Connect to GND.
56	XT2			Open.
57	IC			Connect to GND.
58 59	X1 X2			X'tal connection terminal.
60	RESET	input		Reset input.
61	XA1	output	NM	Address output 1.
62	XA0	output	NM	Address output 0.
63	KST1	output	NM	Key strobe output.
64	KST0	output	NM	Key strobe output.
65	BRST	output	NM	BUS reset.
66	MWR	output	NM	Memory write strobe output.

Pin	Pin name	I/O	Output Format	Function
67	MRD	output	NM	Memory read strobe output.
68	XST	output	NM	Strobe output.
69	ASLMD2	output	NM	ASL mode 2.
70	ASLMD2	output	NM	ASL mode 1.
71	SUBPW	output	NM	IC903 power control.
72	MUTE	output	NM	Mute output.
73	AVSS			A/D converter GND.
74	MD3	input		Mechanism switch sensor return input.
77	MD0			
78-80				Connect to GND.

Output Format	Meaning
C	C-MOS
NM	Neutral resistivity N channel open drain

MSM82C55A-2GS



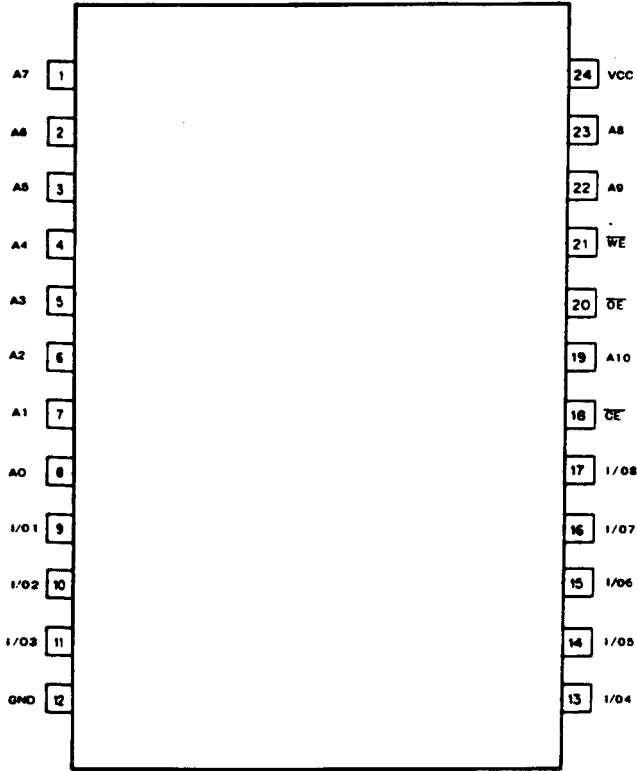


● Pin Functions (MSM82C55A-2GS)

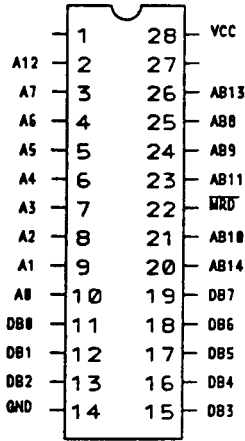
Pin	Pin name	I/O	Output Format	Function and Operation
1	CS	input		Chip select input.
2	GND			GND
3	XA1	input		Address input 1.
4	XA0	input		Address input 2.
5	FLPPW	output	C	Motor driver power control.
6	REM1	output	C	AUX control output 1.
7	REM0	output	C	AUX control output 0.
8	FLPCLS	output	C	Front panel close output.
9	CNTR	output	C	DIR counter clock output.
10	ADC/DIR	output	C	DIR ADC/DIR switching output.
11	EMP	output	C	
12	NC			
13	FLPOPEN	output	C	Front panel open output.
14   16	AB8   AB10	output	C	Memory address output.
17	VCC			VCC +5V
18   21	AB11   AB14	output	C	Memory address output.
22	NC			
23	AB15	output	C	Memory address output.
24	VCC			VCC +5V
25   32	DB7   DB0	input/ output	C	Data input.
33	RESET	input		Reset input.
34	XST	input		Strobe input.
35   38	AB7   AB4	output	C	Memory address output.
39	VCC			VCC
40   43	AB3   AB0	output	C	Memory address output.
44	VCC			

Output Format	Meaning
C	C-MOS
NM	Neutral resistivity N channel open drain

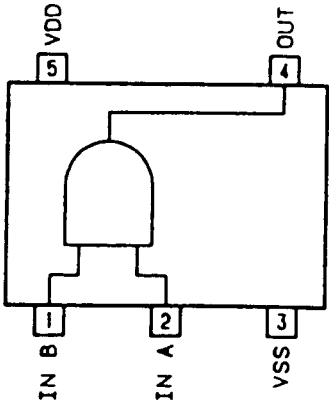
CXK5818M-15L



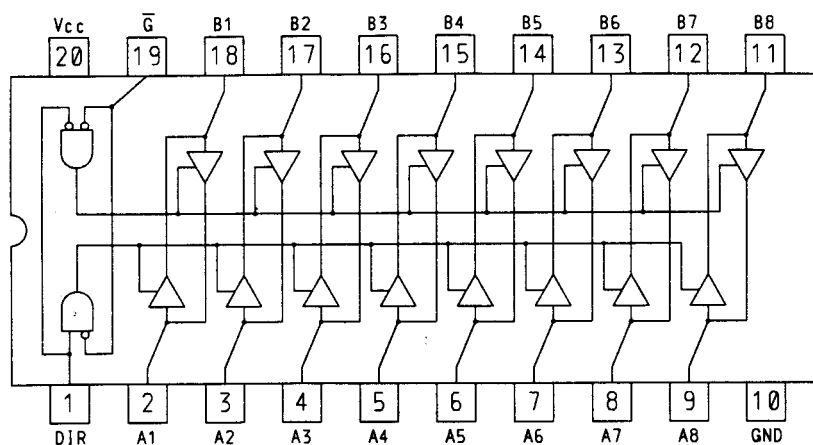
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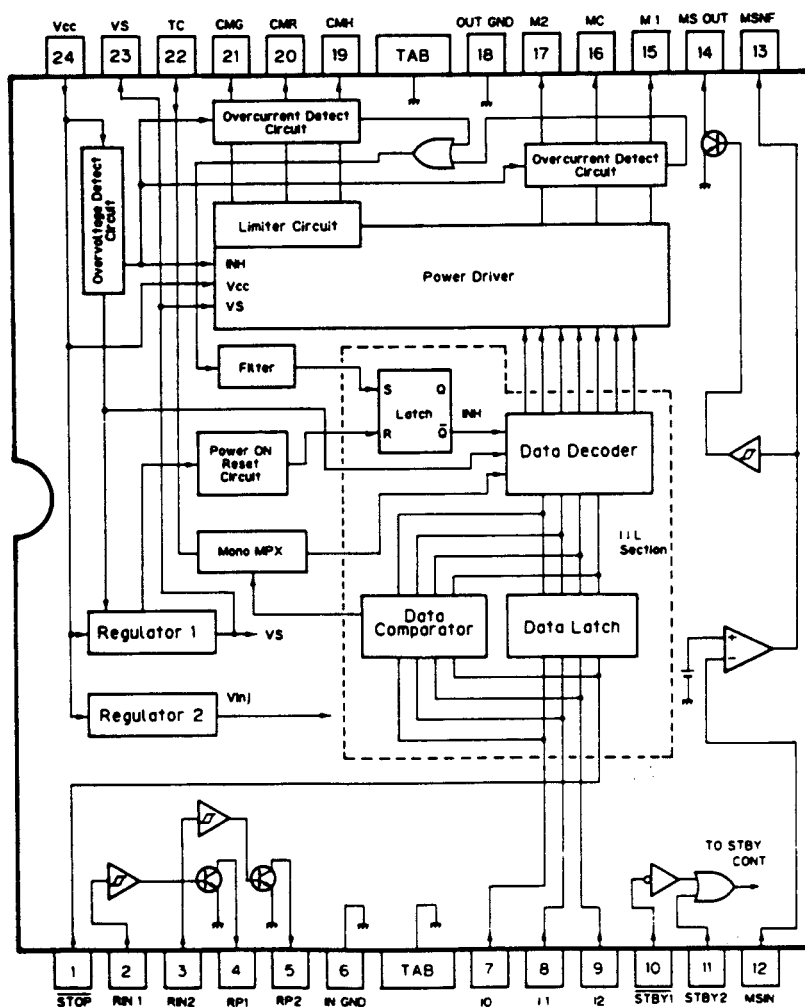
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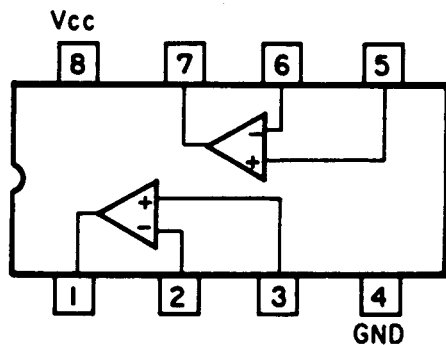
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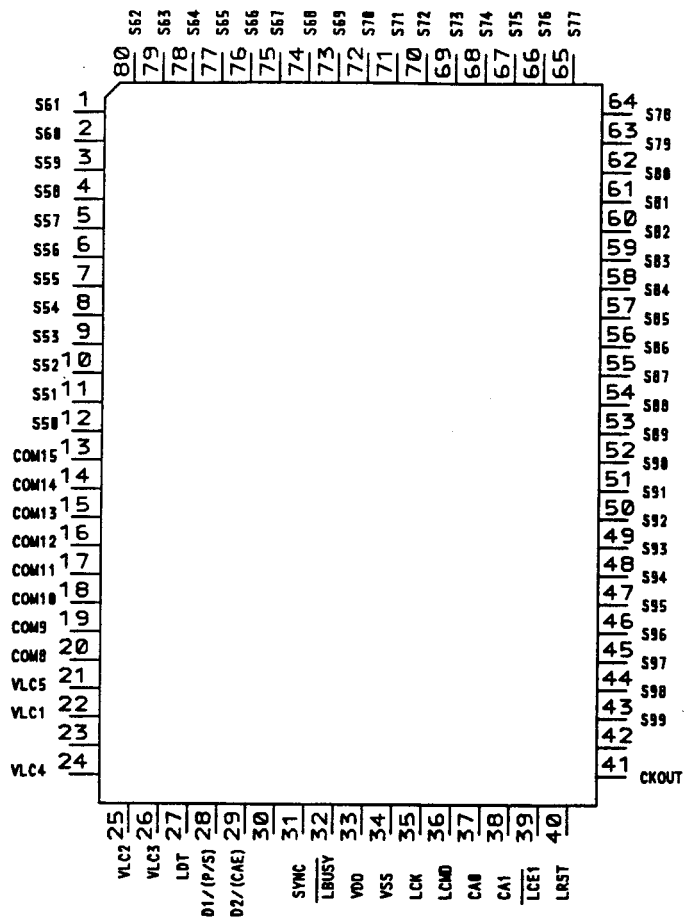
PA3022



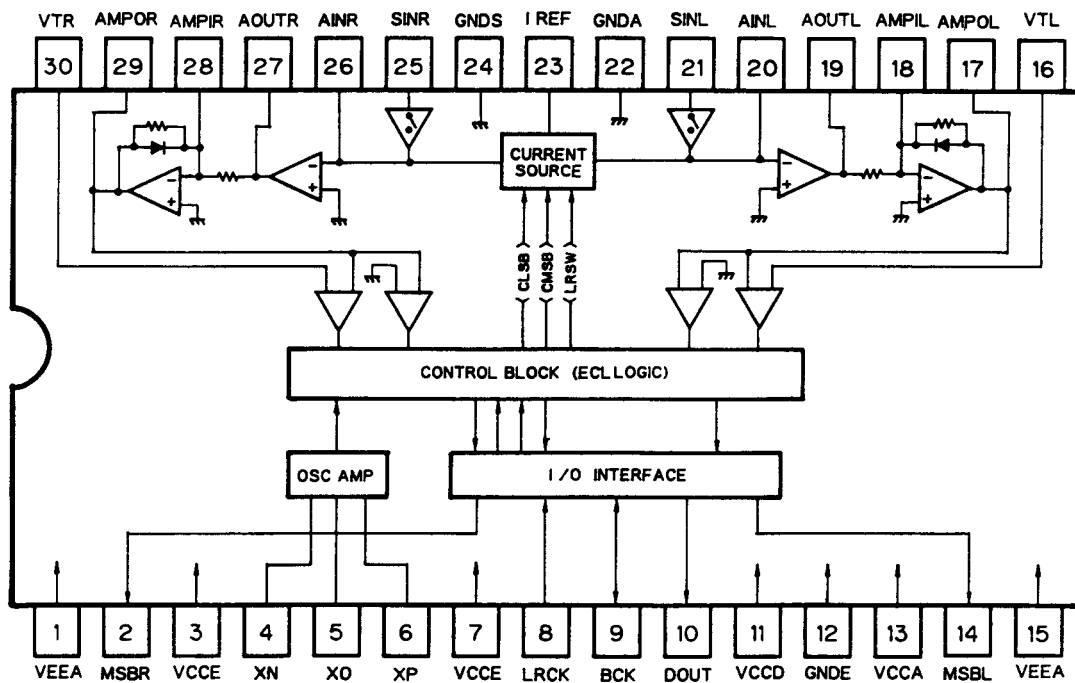
UPC4570G



UPD7228AG



TD6726N



● Pin Functions (TD6726N)

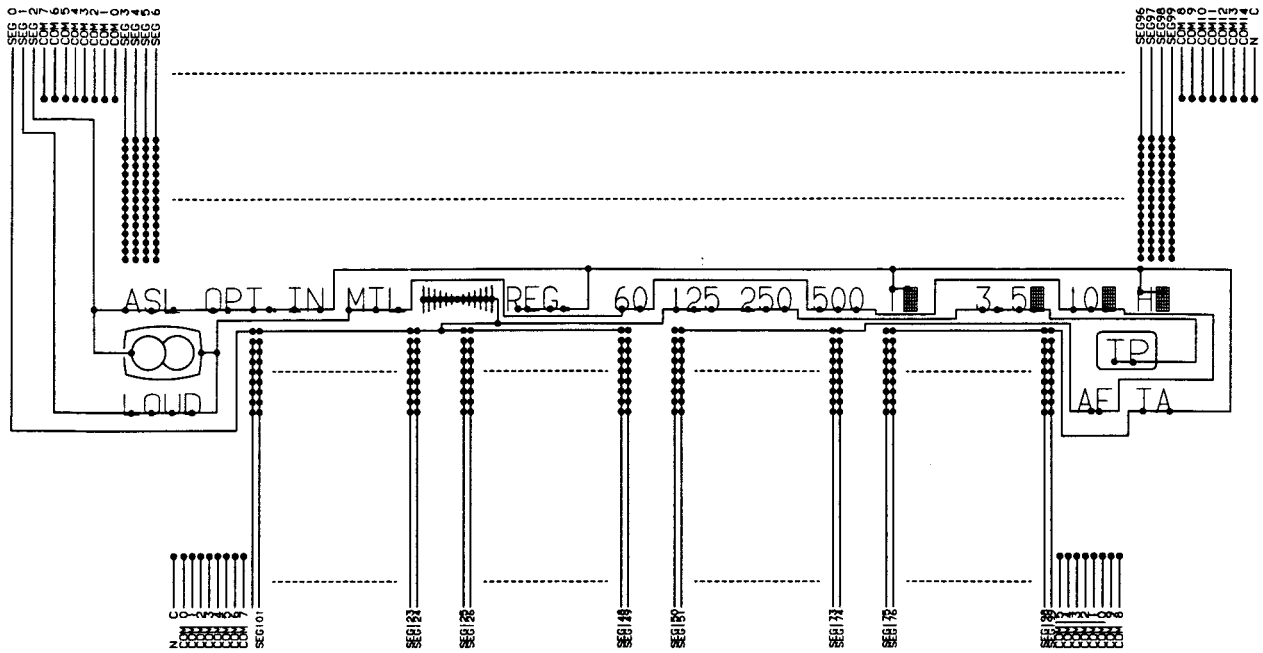
Pin	Pin Name	I/O	Function and Operation
1	VEEA		Analog negative power supply voltage terminal (-5V)
2	MSBR	O	Rch MSB signal output terminal
3	VCCE		ECL logic positive power supply voltage terminal (+5V)
4	XN	I	Oscillation amplifier I/O terminal
5	XO	O	
6	XP	I	
7	VCCE		ECL logic positive power supply voltage terminal (+5V)
8	LRCK	I	LR clock pulse input terminal
9	BCK	I	Bit clock pulse input terminal
10	DOUT	O	Digital audio data output terminal
11	VCCD		Digital positive power supply voltage terminal (+5V)
12	GNDE		ECL logic ground terminal
13	VCCA		Analog positive power supply voltage terminal (+5V)
14	MSBL	O	Lch MSB signal output terminal
15	VEEA		Analog negative power supply voltage terminal (-5V)
16	VTL	I	Lch comparator reference voltage terminal
17	AMPOL	O	Lch DC gain amplifier output terminal
18	AMPIL	I	Lch DC gain amplifier input terminal
19	AOUTL	O	Lch integrating amplifier output terminal
20	AINL	I	Lch integrating amplifier input terminal
21	SINL	I	Lch audio analog signal input terminal
22	GNDA		Analog ground terminal
23	IREF	I	Integrating reference current input terminal
24	GNDS		Analog signal ground terminal
25	SINR	I	Rch audio analog signal input terminal
26	AINR	I	Rch integrating amplifier input terminal
27	AOUTR	O	Rch integrating amplifier output terminal
28	AMPIR	I	Rch DC gain amplifier input terminal
29	AMPOR	O	Rch DC gain amplifier output terminal
30	VTR	I	Rch comparator reference voltage terminal

# KHA175

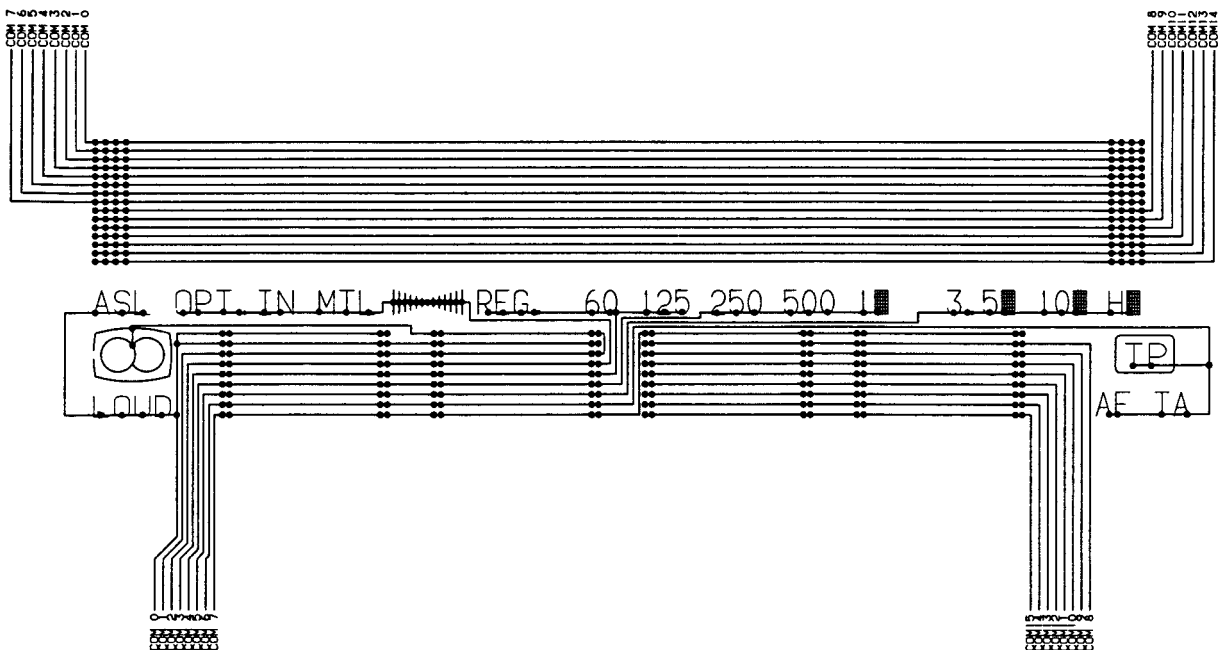
1	-8.5V	OUT1 (FR)	20
2	+8.5V	OUT2 (FL)	19
3	NC	OUT3 (RR)	18
4	IN1 (FR)	OUT4 (RL)	17
5	IN2 (FL)	+5V	16
6	IN3 (RR)	-5V	15
7	IN4 (RL)	GND	14
		ST	13
		DT	12
8	GND	CK2	11
9	ATT	CK1	10

● LCD (CAW1107)

SEGMENT



COMMON



## 7. CONNECTION DIAGRAM (1)

## AUDIO P.C. BOARD

IC, Q Q604  
ADJ VR252 VR702 VR705 VR706 VR701 VR703 IC601 VR601  
IC651 IC704 Q303 IC702 IC952 Q511 Q703 Q702 Q508 Q701 Q505 Q954 IC951 Q503 Q963 Q960  
Q652 IC701 Q301 IC703 IC606 Q304 IC602 Q602 IC955 Q512 Q509 Q510 Q962 IC605 Q504 IC956 Q502 Q958 Q964  
IC251 Q651 Q608 Q302 IC607 Q605 Q606 IC608 IC604 IC601 IC603 Q501 Q607 Q609 Q610 Q959 Q961 Q603 Q957

TO EVR P.C. BOARD

TO DAC UNIT

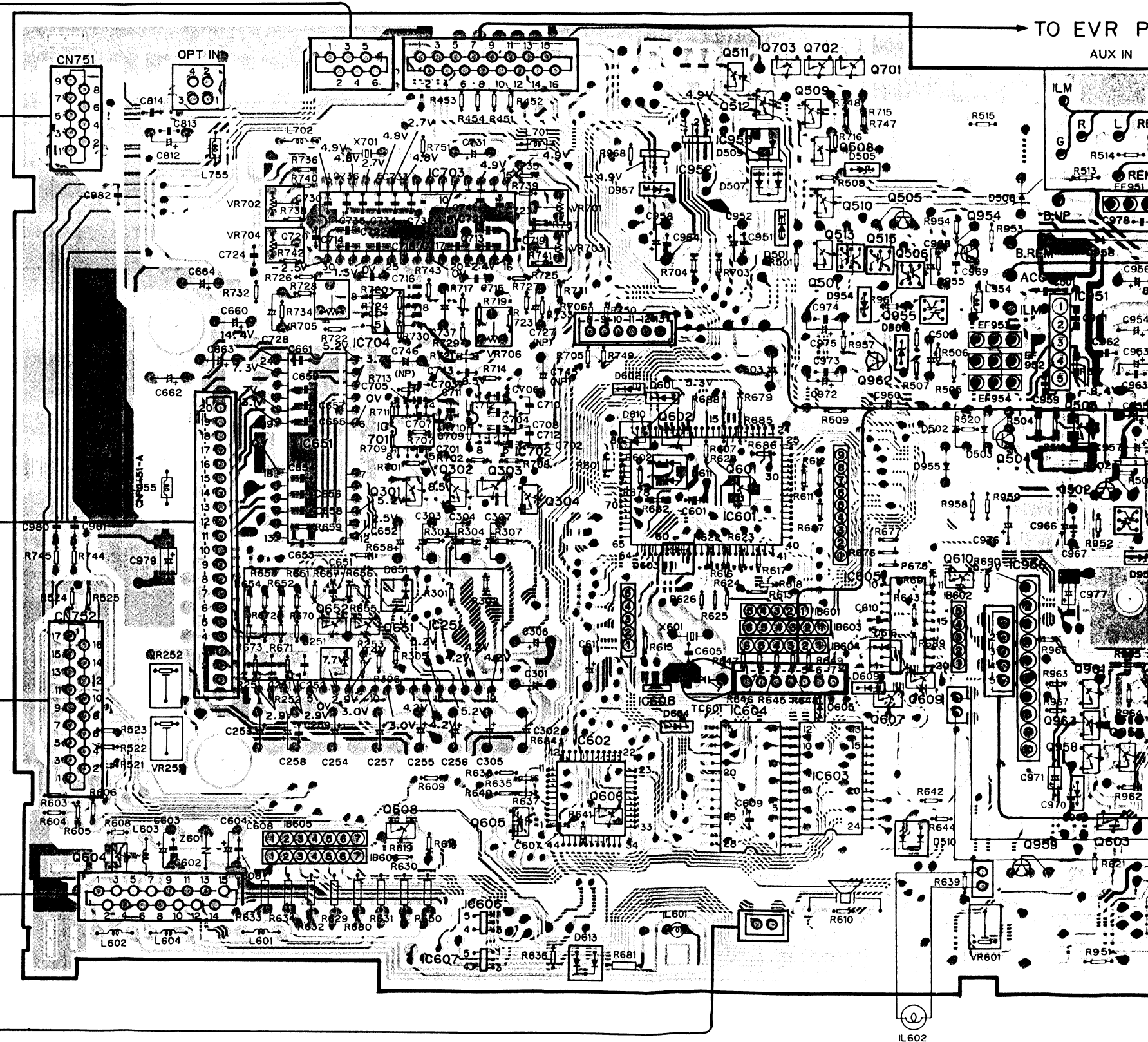
TO CASSETTE  
MECHANISM Assy

TO DAC UNIT

PANEL P.C. BOARD

TO GRILLE  
Assy

SWITCH P.C. BOARD





BOARD

IC651 IC704 Q303 IC702 IC952 Q511 Q703 Q702 Q508 Q701 Q505 Q954 IC951 Q503 Q963 Q960 IC954  
Q652 IC701 Q301 IC703 IC606 Q304 IC602 Q602 IC955 Q512 Q509 Q510 Q962 IC605 Q504 IC956 Q502 Q958 Q964 IC953  
IC251 Q651 Q608 Q302 IC607 Q605 Q606 IC608 IC604 IC601 IC603 Q501 Q607 Q609 Q610 Q959 Q961 Q603 Q957 Q951

VR252 VR251 VR702 VR705 VR706 VR701 VR703 IC601 VR601

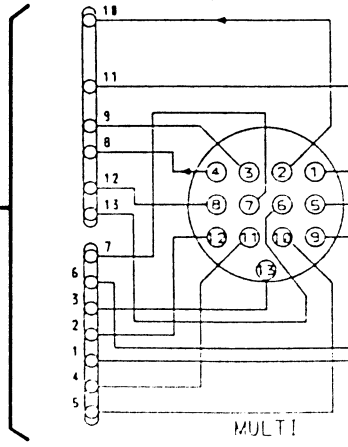
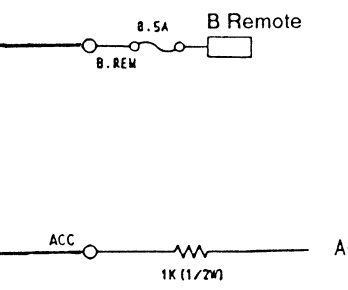
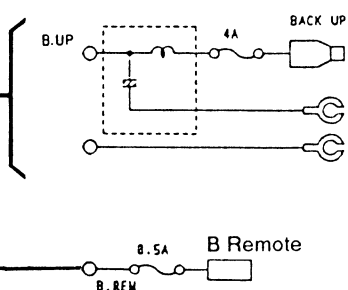
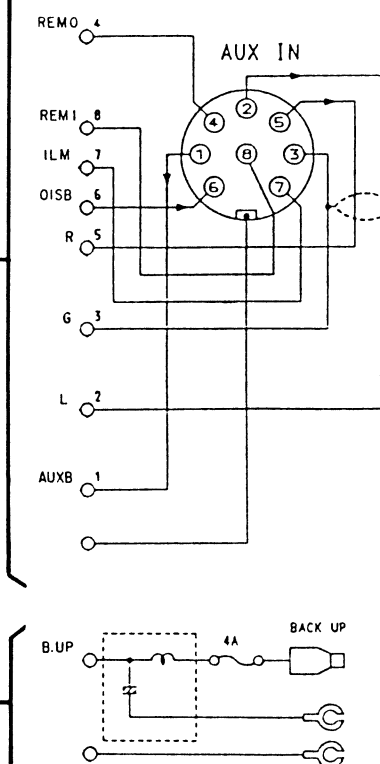
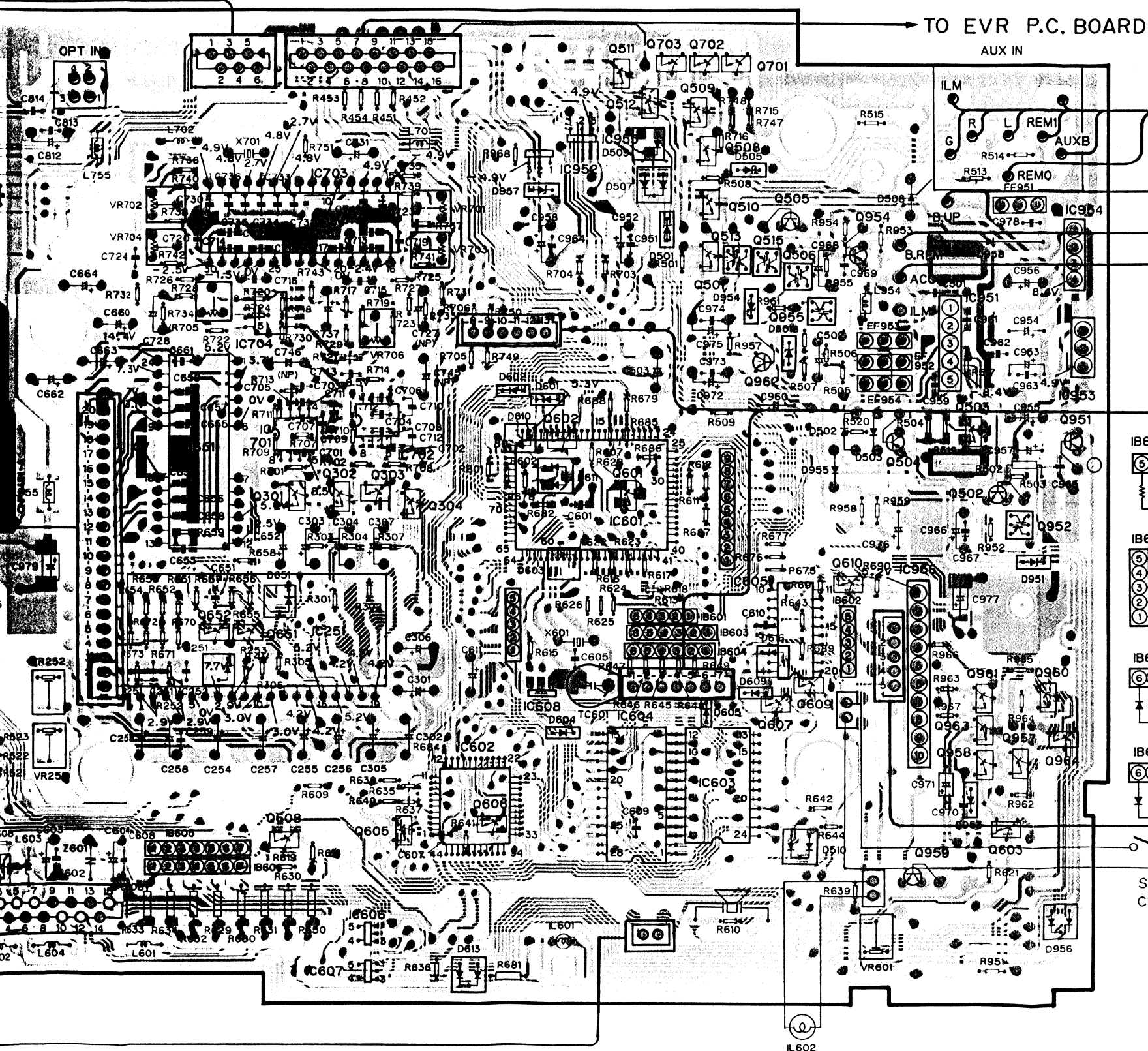
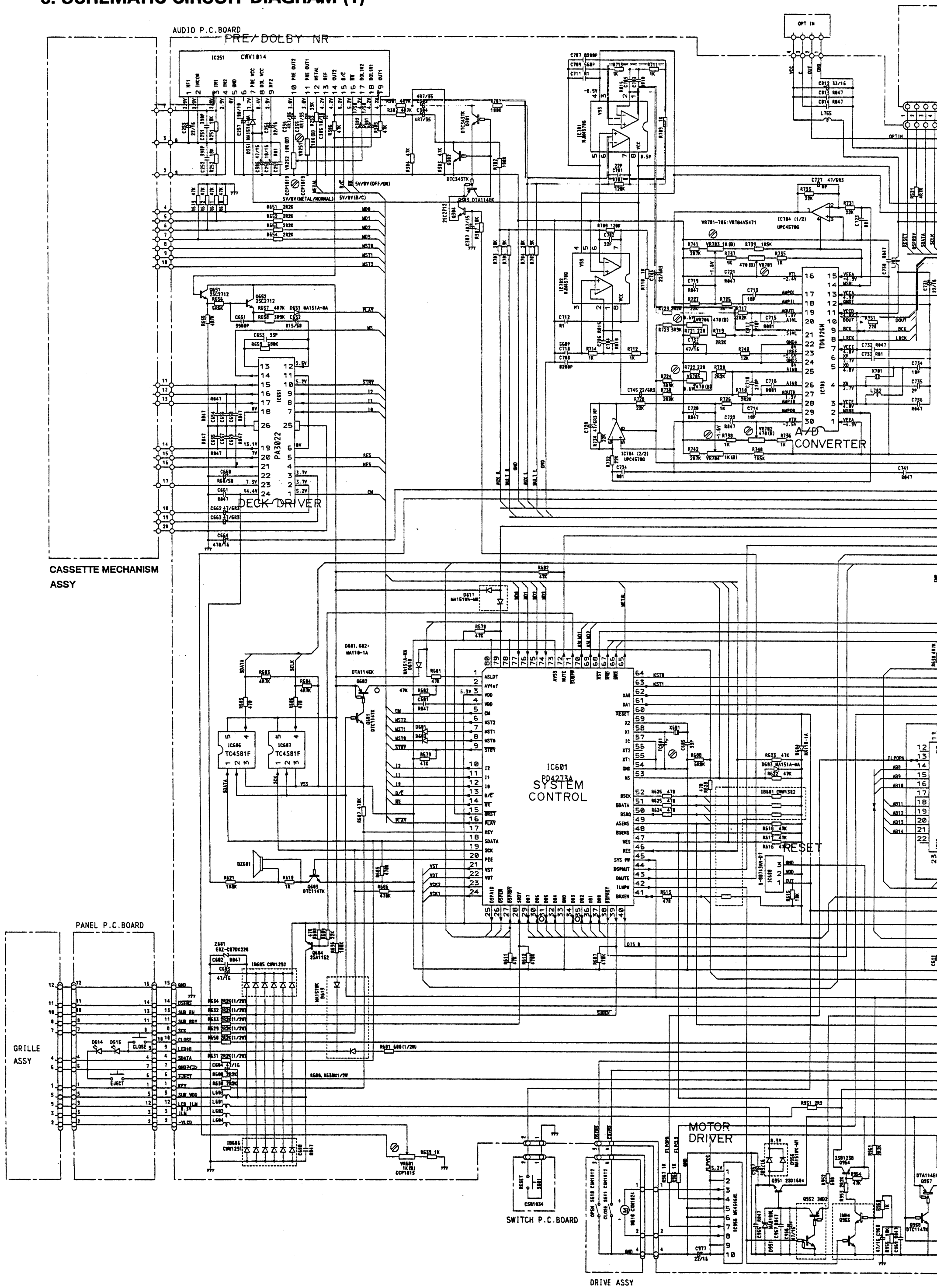


Fig. 14

## 8. SCHEMATIC CIRCUIT DIAGRAM (1)



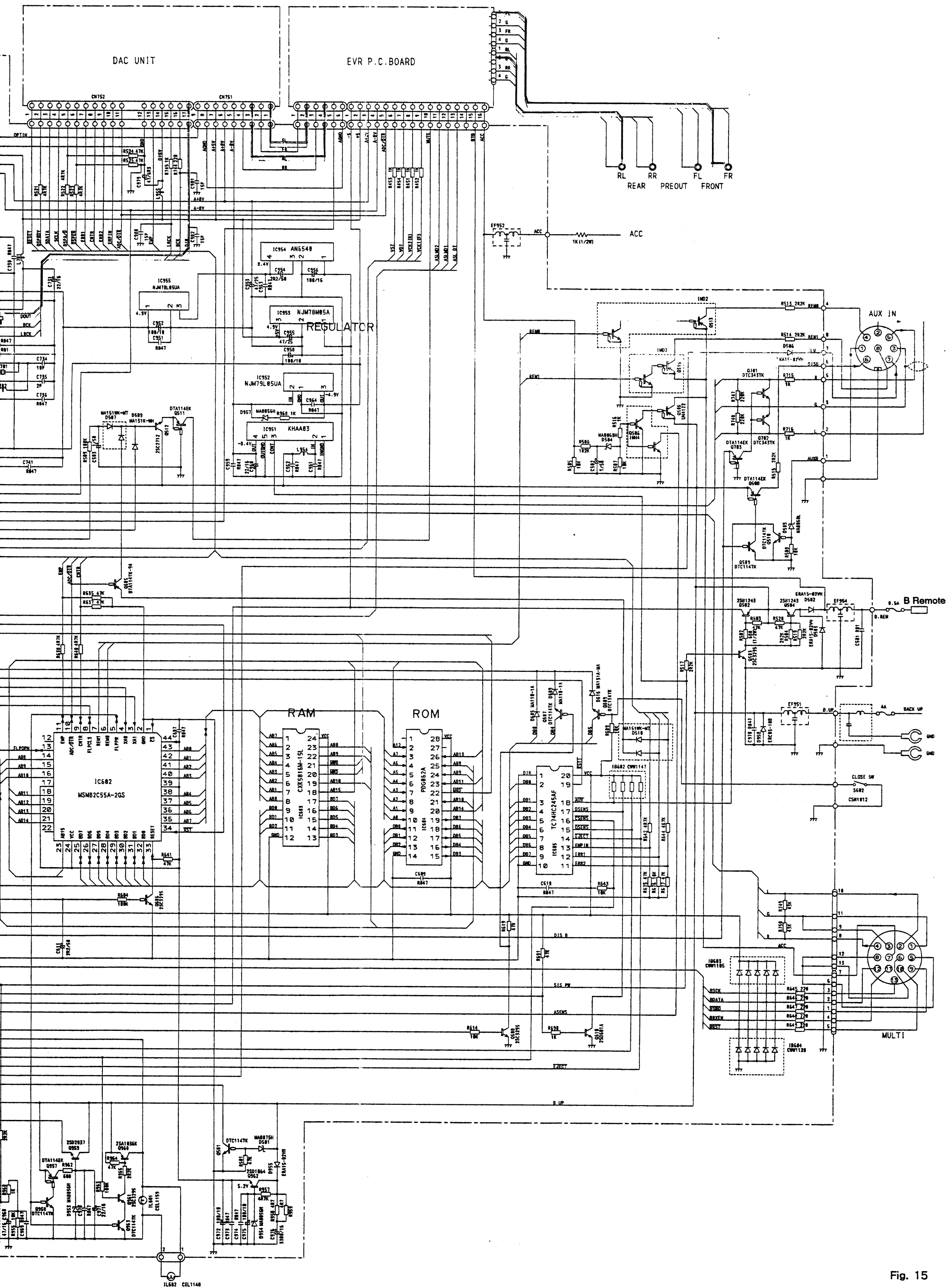
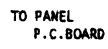


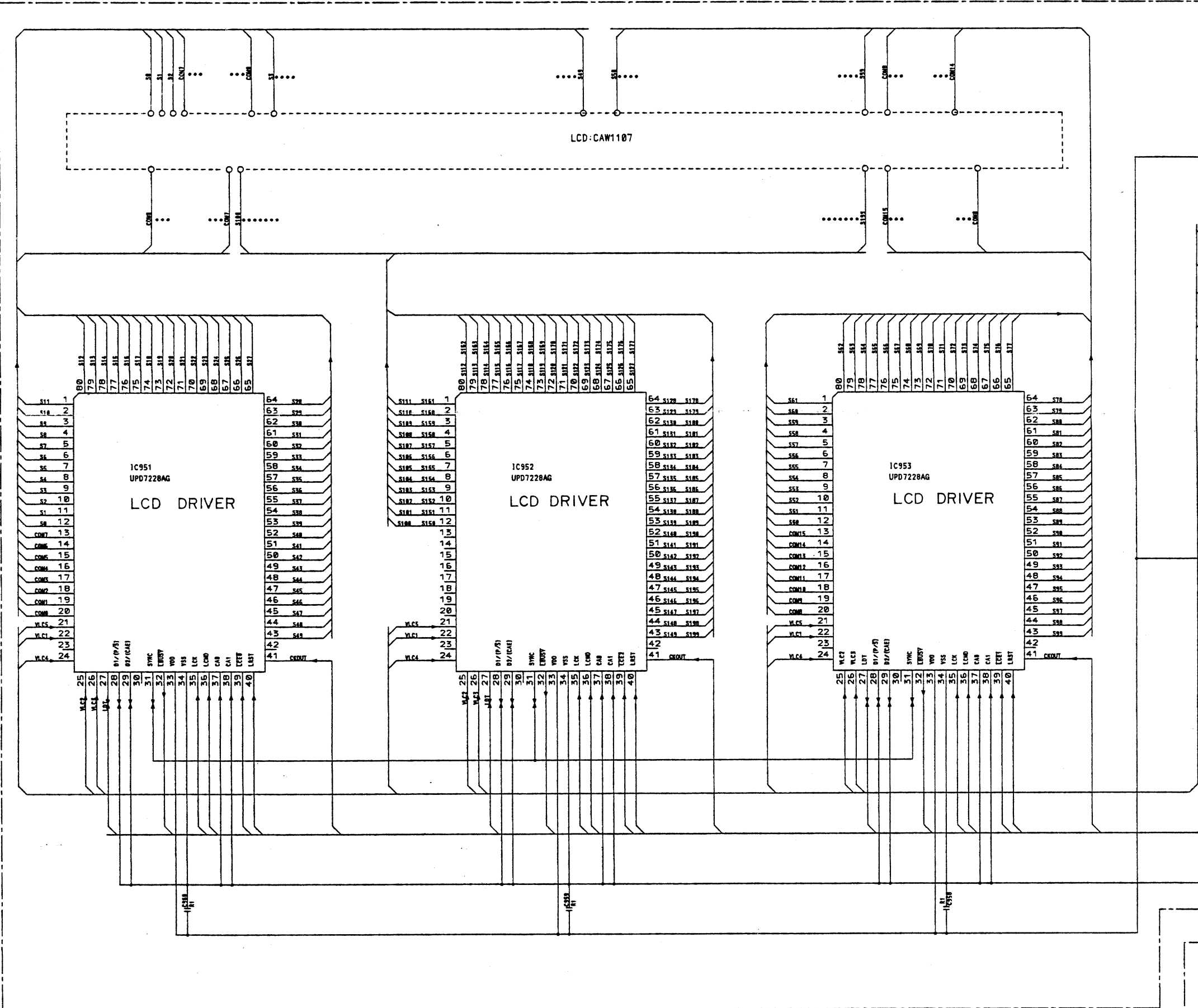
Fig. 15



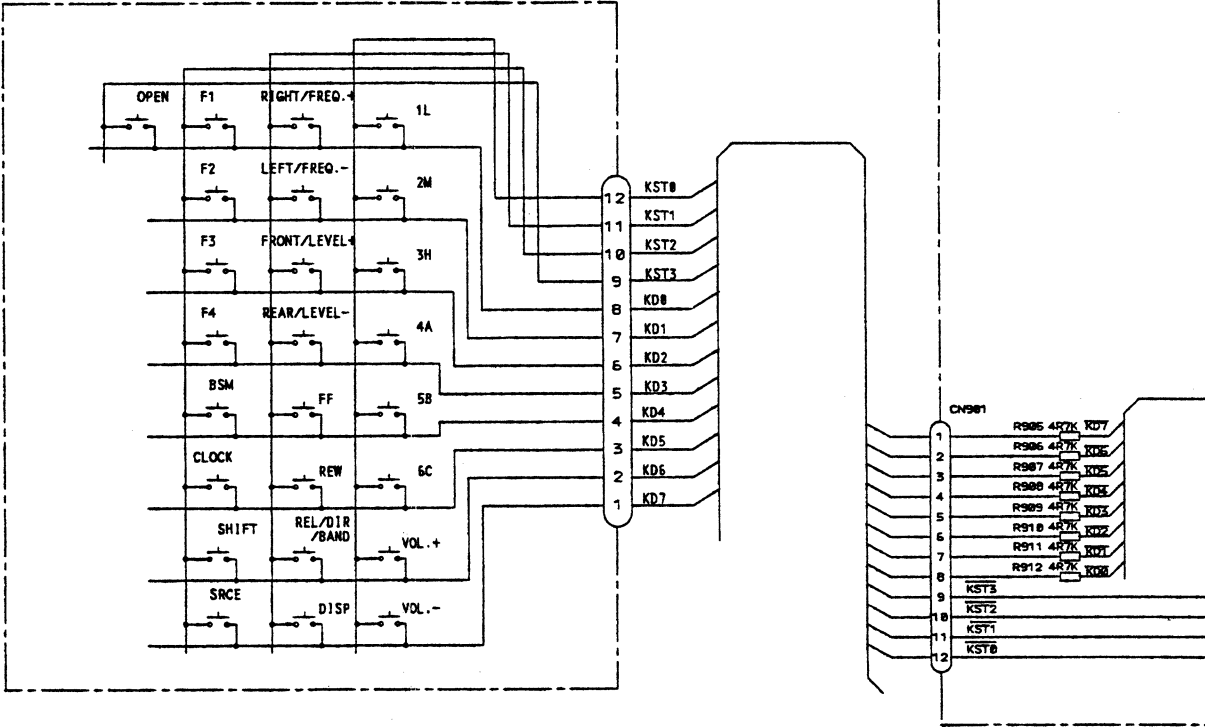
**Fig. 16**

# 9. SCHEMATIC CIRCUIT DIAGRAM (2)

● Grille Assy



## KEY UNIT





## 10. CONNECTION DIAGRAM (2)

## CONTROL P.C.BOARD

IC IC902

IC901

IC903

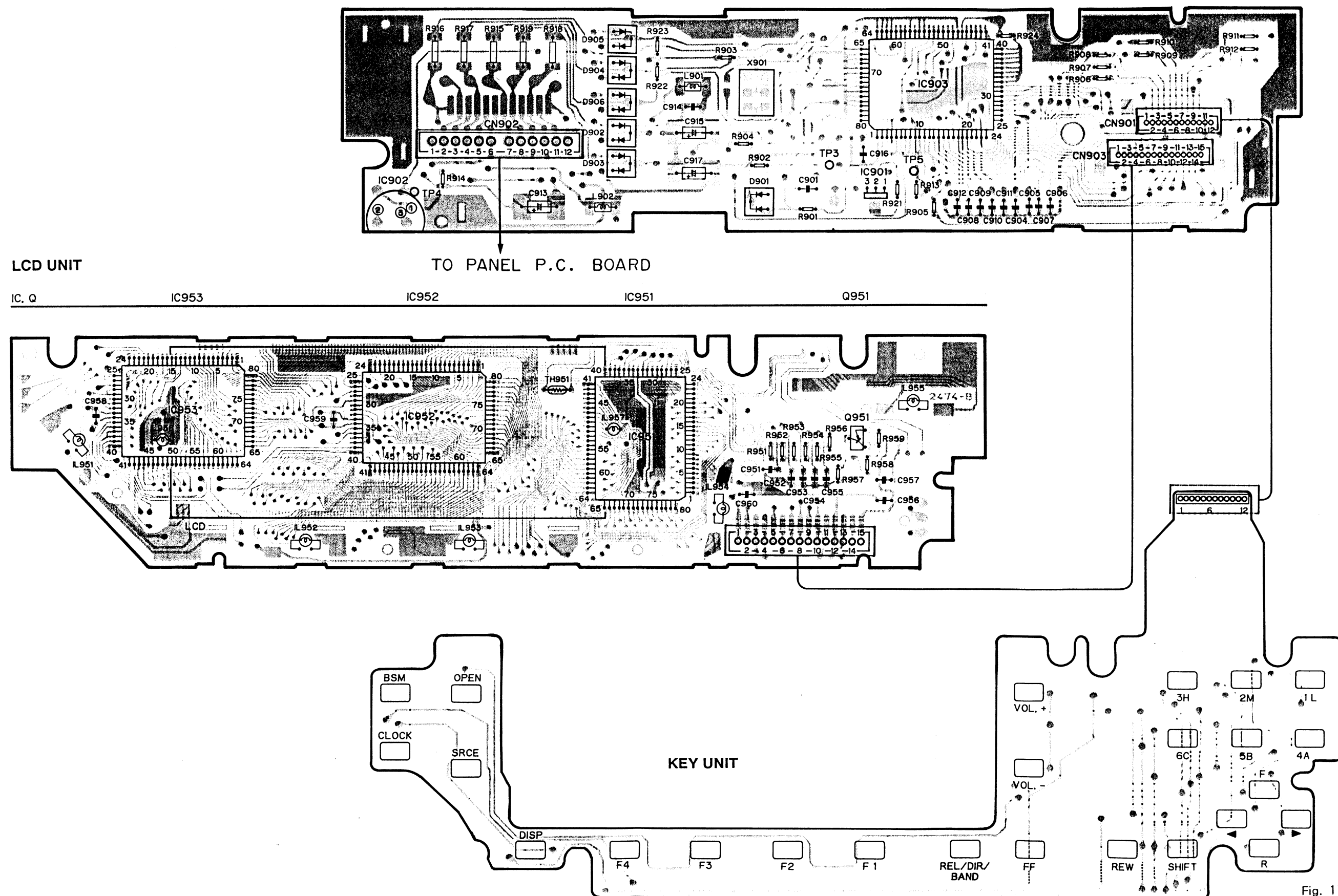


Fig. 17

## 11. SCHEMATIC CIRCUIT DIAGRAM (3)

● DAC Unit

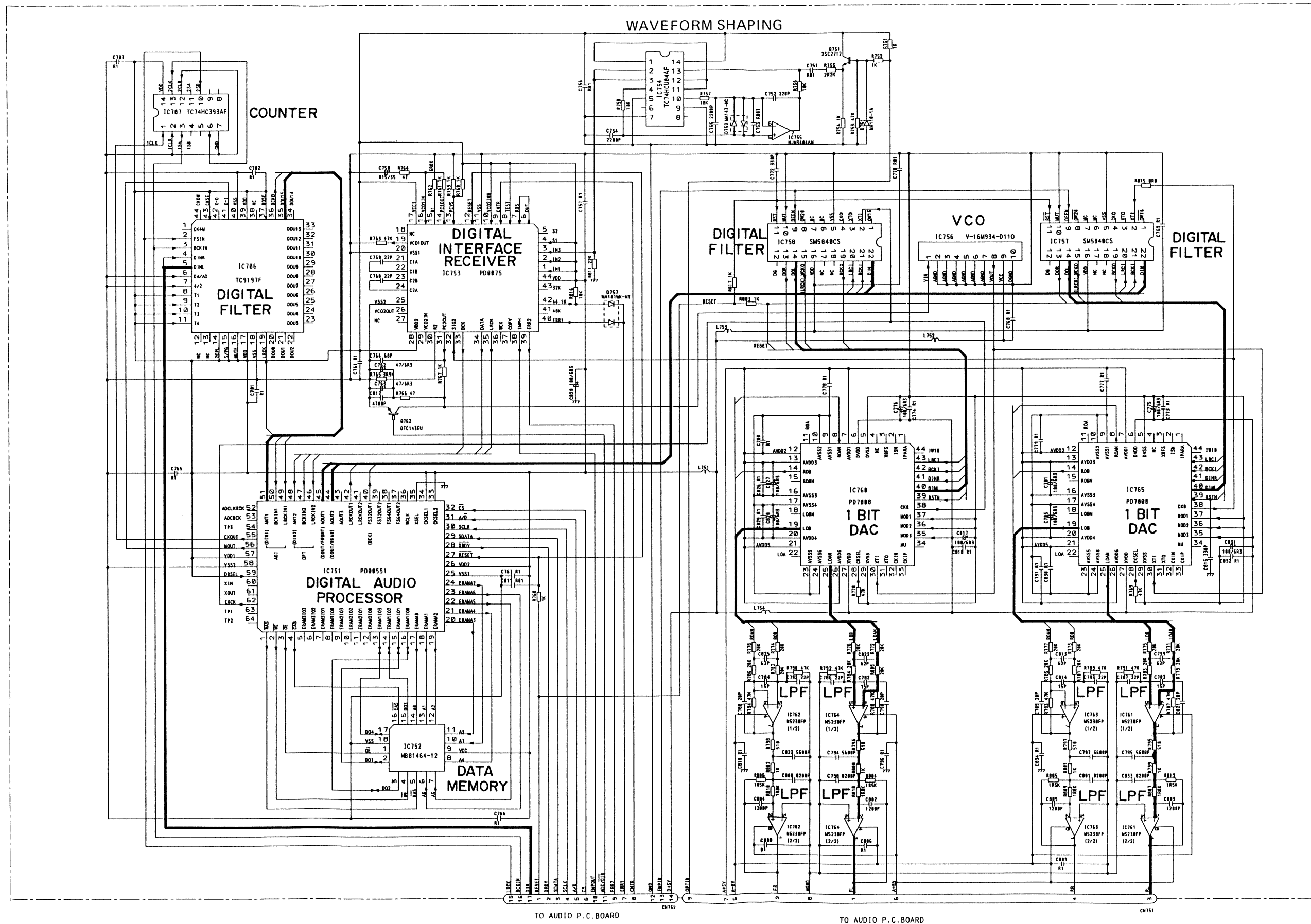


Fig. 18

# 12. CONNECTION DIAGRAM (3)

● DAC Unit

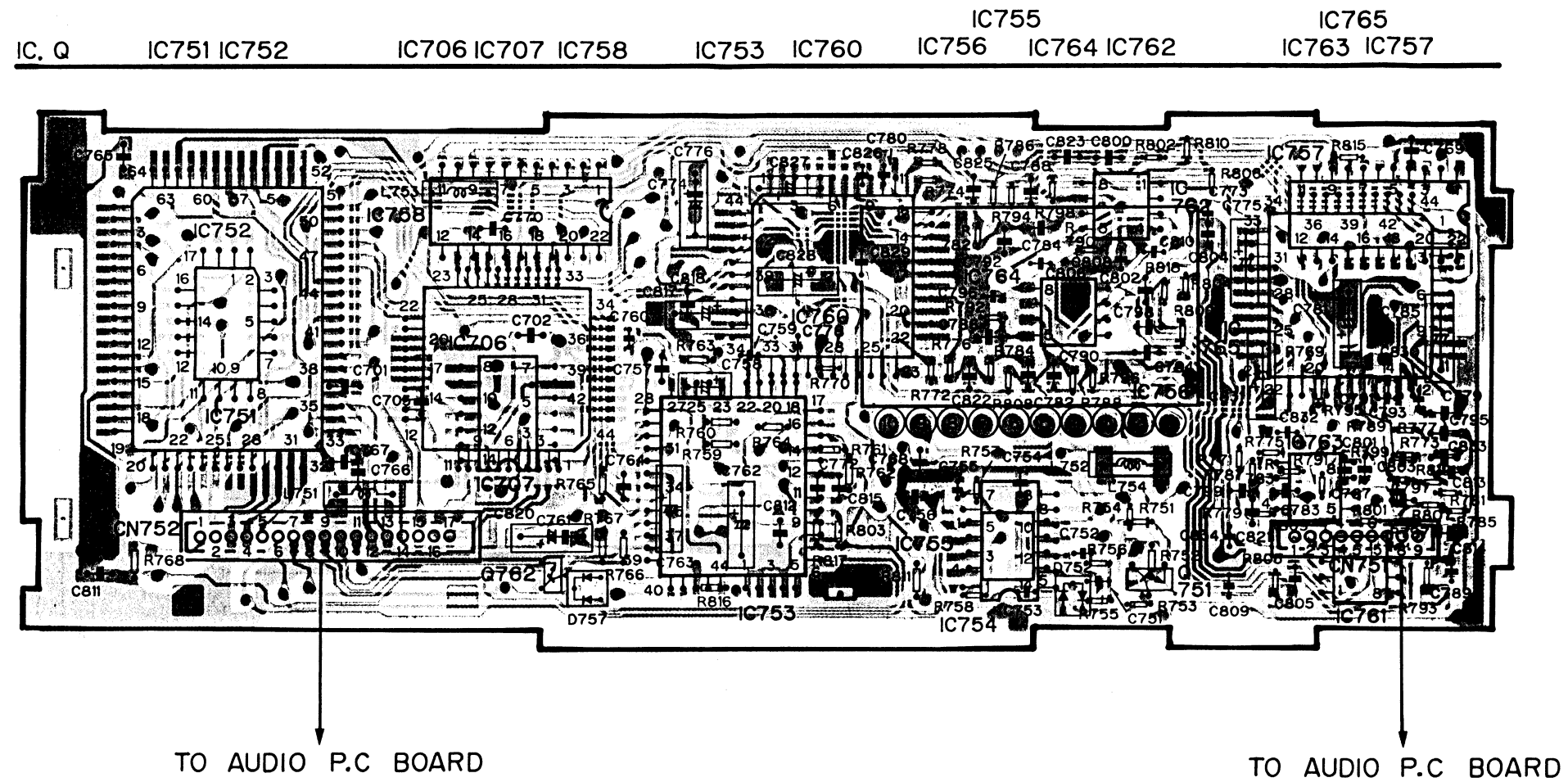


Fig. 19



13. SCHEMATIC CIRCUIT DIAGRAM (4)

● EVR P.C.Board

A

B

C

D

A

B

C

D

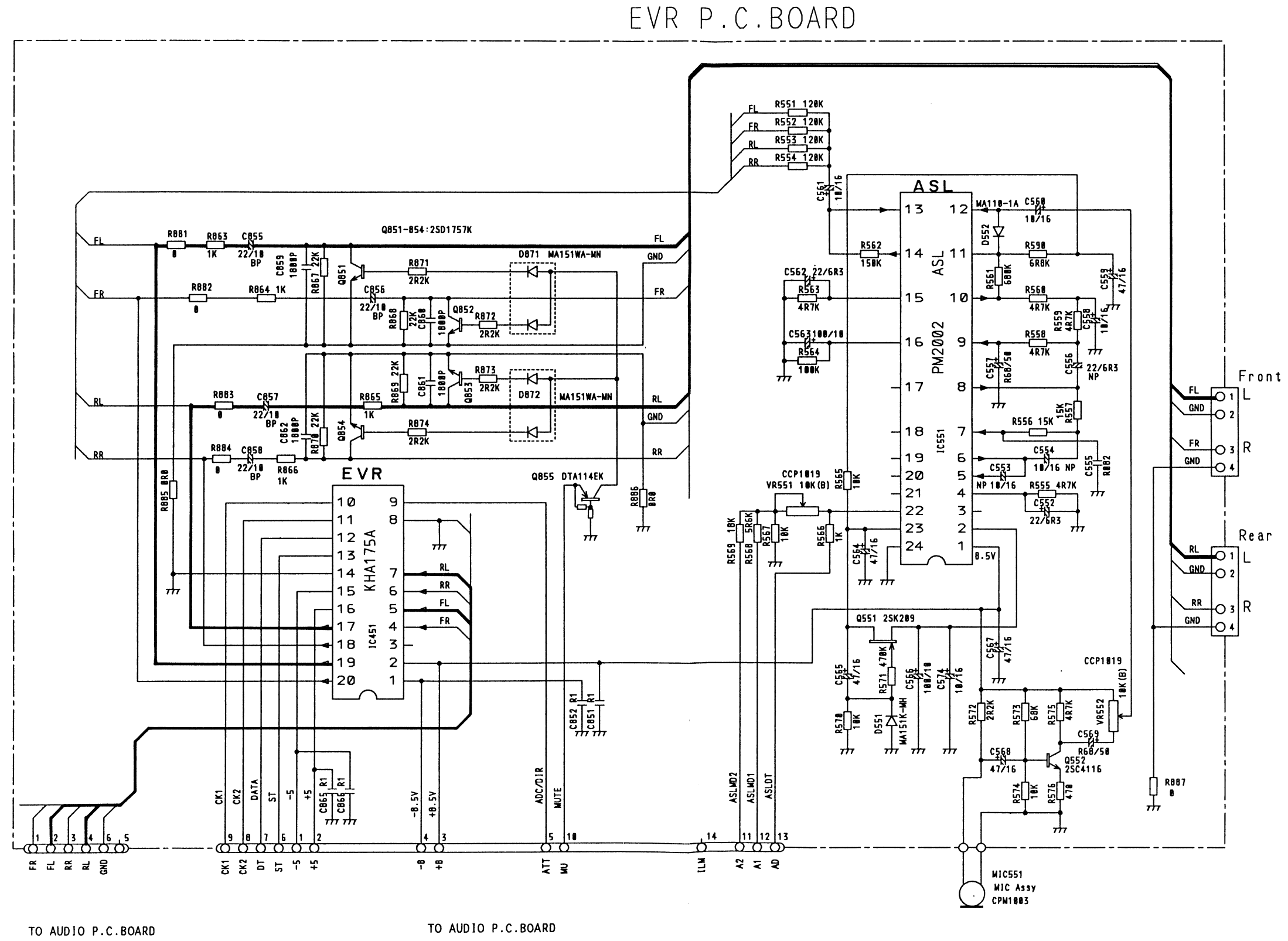
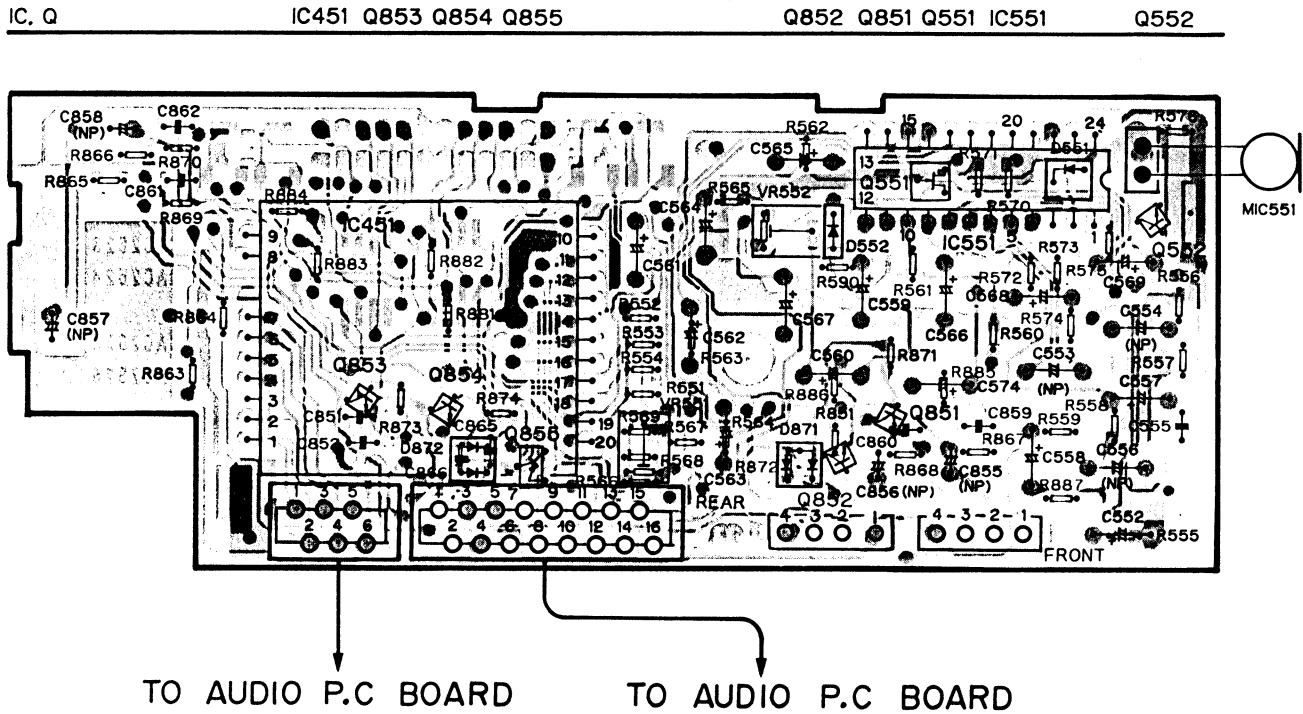


Fig. 20

14. CONNECTION DIAGRAM (4)

● EVR P.C. Board



15. CONNECTION DIAGRAM (5)

● Cassette Mechanism Assy

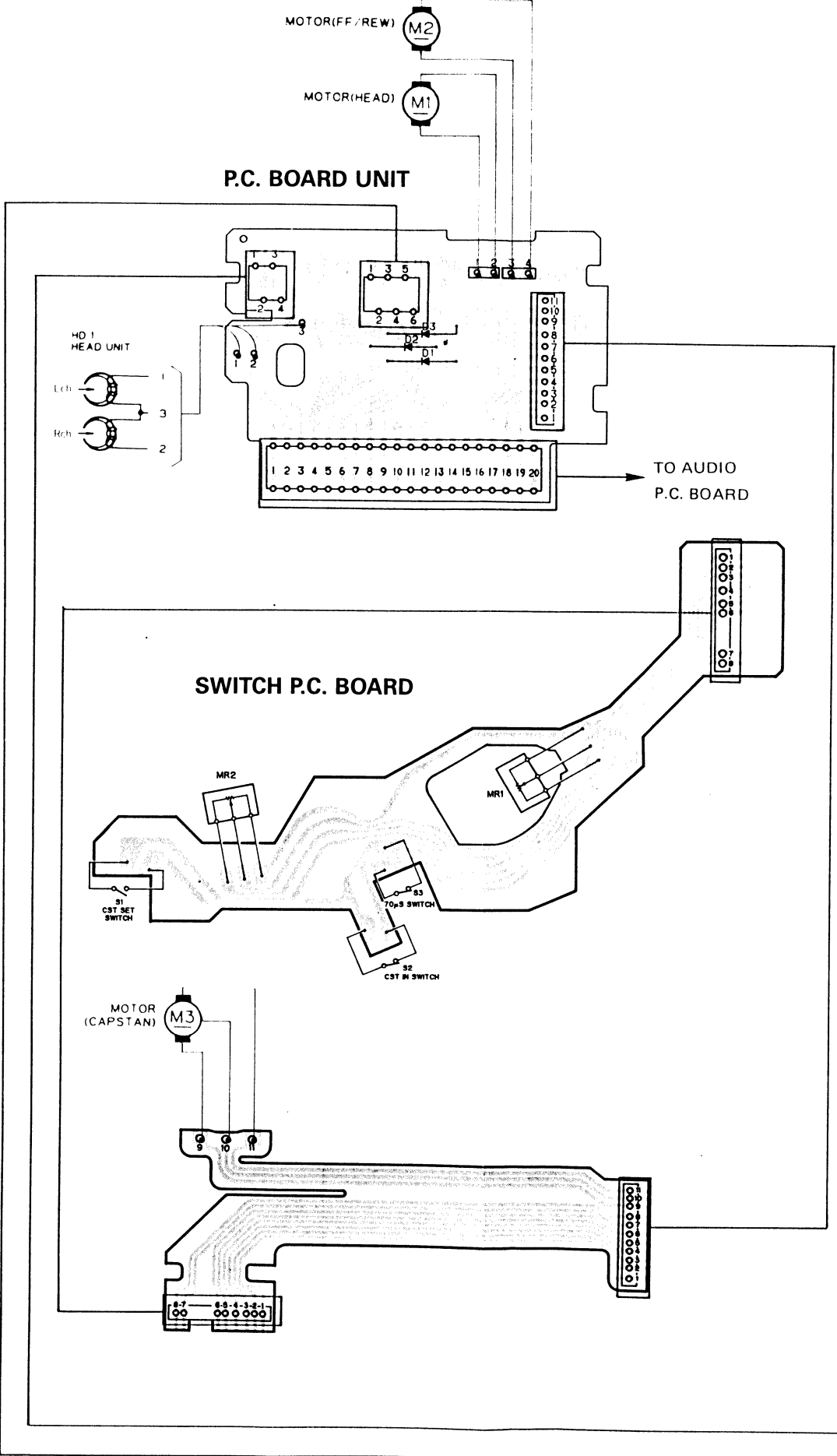
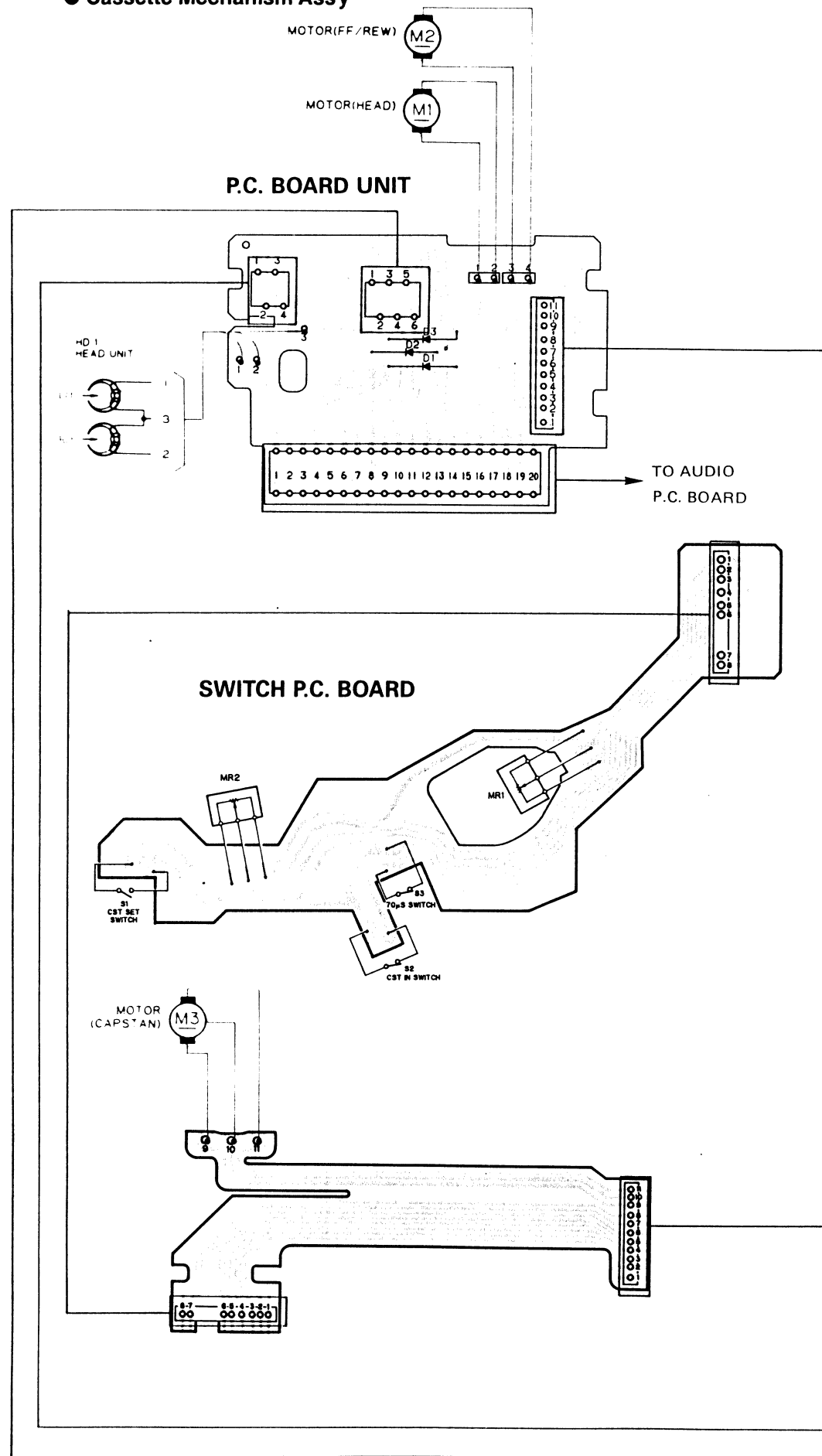


Fig. 21

# 15. CONNECTION DIAGRAM (5)

● Cassette Mechanism Assy



# 16. SCHEMATIC CIRCUIT DIAGRAM (5)

KEX-M900

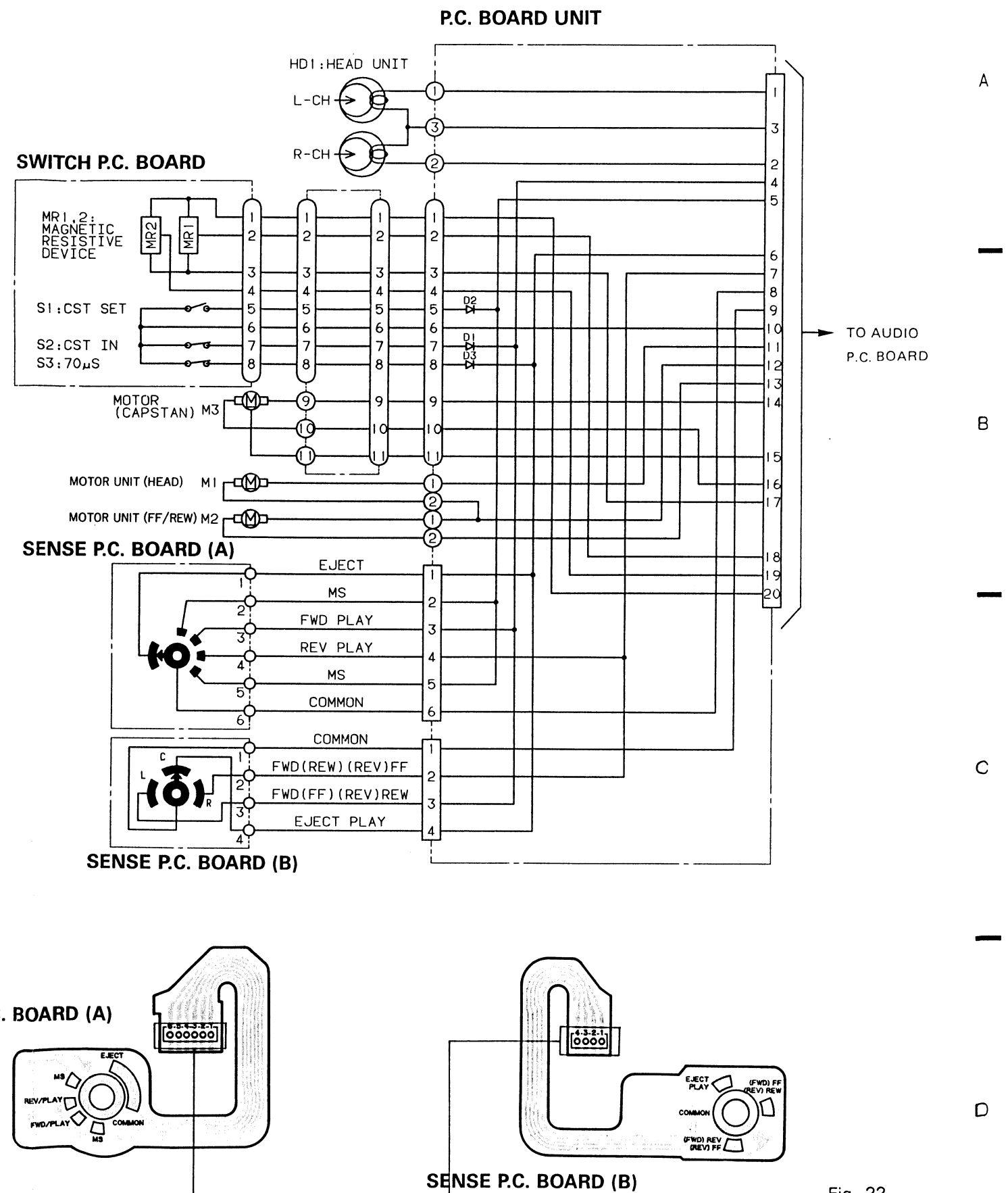


Fig. 22

## 17. CHASSIS EXPLODED VIEW

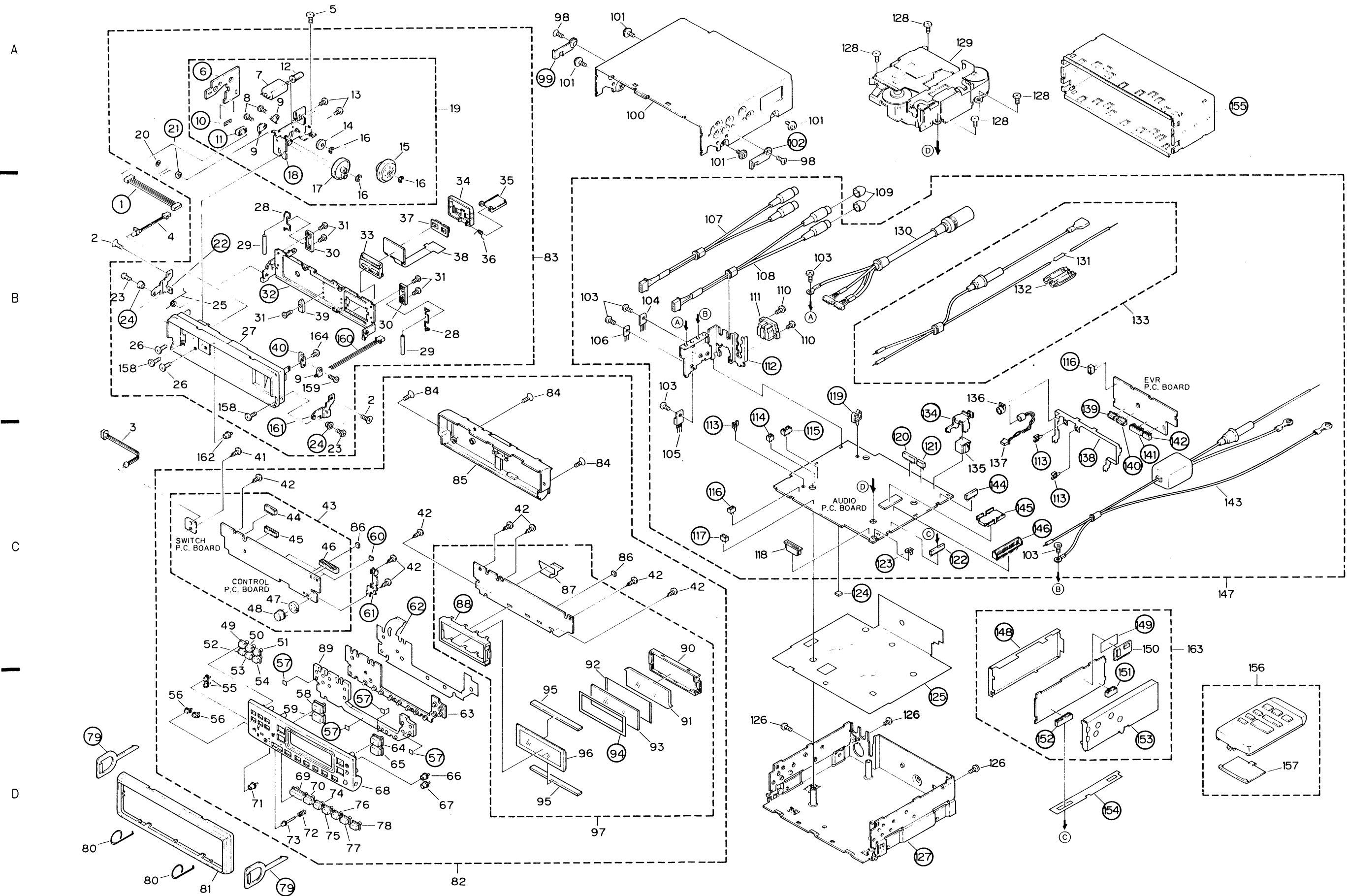


Fig. 23

## NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

A

## ● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Connector		41	Screw	BPZ20P050FMC
2	Screw	CMZ30P050FMC	42	Screw	BPZ20P080FMC
3	Cord	CDE2918	● 43	Control Unit	CWM2379
4	Lamp	CEL1148	44	Connector	CKS1950
5	Screw	BMZ30P050FMC	45	Connector	CKS1953
6	P. C. Board		46	Plug	CKS1663
7	Motor	CXM1024	47	Spacer	CNM2853
8	Screw	BMZ20P050FMC	48	IC	BX-1393
9	Switch	CSN1012	49	Button(1L)	CAC2623
10	Spacer		50	Button(2M)	CAC2624
11	Plug		51	Button(3H)	CAC2625
12	Gear	CNV2389	52	Button(4A)	CAC2626
13	Screw	PMZ20P030FMC	53	Button(5B)	CAC2627
14	Gear	CNV2458	54	Button(6C)	CAC2628
15	Gear Unit	CXA3406	55	Button(   )	CAC2629
16	Washer	YE20FUC	56	Button(—)	CAC2630
17	Gear Unit	CXA3407	57	Spacer	
18	Holder Unit		58	Button(+)	CAC2631
19	Drive Assy	CXA3408	59	Button(—)	CAC2632
20	Washer	CBF1037	60	Spacer	
21	Spacer		61	Holder	
22	Holder		62	P. C. Board	
23	Screw	CBA1143	63	Rubber	CNV2549
24	Shaft		64	Button(Ej)	CAC2650
25	Spring	CBH1398	65	Button(SRCE)	CAC2641
26	Screw	CBA1166	66	Button(B)	CAC2603
27	Panel Unit	CXA3735	67	Button( J )	CAC2604
28	Spring	CBH1399	68	Grille Unit(US)	CXA3737
29	Roller	CLA1706		Grille Unit(ES)	CXA3738
30	Holder	CNV2141	69	Button(+ —)	CAC2633
31	Screw	CBA1082	70	Button(◀ ▶)	CAC2634
32	Holder Unit		71	Button( J )	CAC2557
33	Socket	CKS2016	72	Spring	CBH1376
34	Housing	CNV2558	73	Button(RESET)	CAC2646
35	Cover	CNV2557	74	Button(F1)	CAC2635
36	Spring	CBH1217	75	Button(F2)	CAC2636
37	Rubber	CNV2569	76	Button(F3)	CAC2637
38	P. C. Board	CNP2456	77	Button(F4)	CAC2638
39	Guide	CNV2559	78	Button(DISP)	CAC2550
40	Holder		79	Holder	

D

Mark No.	Description	Part No.	Mark No.	Description	Part No.
80	Spring	CBH-865	124	Cushion	
81	Panel	CNS2165	125	Insulator	
◎ 82	Grille Assy (US)	CXA3719	126	Screw	BMZ30P050FMC
◎ 83	Grille Assy (ES)	CXA3724	127	Chassis Unit	
◎ 83	Panel Assy	CXA3717	128	Screw	BMZ26P050FMC
84	Screw	CBA1172	◎ 129	Cassette Mechanism Assy	CXK1605
85	Cover Unit	CXA3742	130	DIN Connector Cord	CDE2923
86	Cushion	CNN-412	131	Resistor	RS1/2P102JL
87	P. C. Board	CNP2457	132	Cap	CNS1472
88	Holder		133	Cord Assy	CDE3051
89	Lens	CNV2556	134	Holder	
90	Housing	CNV2597	135	Connector	CKS2014
91	Lens	CNV2701	136	Holder	CNV2196
92	Plate	CNM3016	137	MIC Assy	CPM1003
93	LCD	CAW1108	138	Holder	
94	Spacer		139	Plug	
95	Connector	CNV2560	140	Plug	
96	LCD	CAW1107	141	Plug	
◎ 97	LCD Unit	CWM2378	142	Plug	
98	Screw	CMZ40P060FMC	143	Cord Assy	CDE3048
99	Holder		144	Connector	
100	Case	CNB1370	145	Heat Sink	
101	Screw	PMS30P050FZK	146	Plug	
102	Holder		◎ 147	Audio Unit	CWM2381
103	Screw	BMZ30P060FMC	148	Shield	
104	IC	AN6540	149	Insulator	
105	IC	NJM78M05A	150	IC	V-16M934-D110
106	Transistor	2SD1684	151	Connector	
107	Connector (FRONT)	CDE3200	152	Connector	
108	Connector (REAR)	CDE3199	153	Holder	
109	Cap	CNV2680	154	Insulator	
110	Screw	BMZ20P060FMC	155	Holder	
111	Connector	CKS1156	156	Remote Control Assy (US)	CXA3731
112	Holder		Remote Control Assy (ES)	CXA3730	
113	Clamper		157	Cover	CNS1962
114	Plug		158	Screw	BMZ26P040FZK
115	Plug		159	Screw	PMZ20P050FMC
116	Plug		160	Connector	
117	Connector		161	Holder	
118	Connector	CKS1567	162	Button	CAC2694
119	Clamper		◎ 163	DAC Unit	CWM2377
120	Plug		164	Screw	BPZ20P040FMC
121	Connector				
122	Connector				
123	Holder				

# 18. CASSETTE MECHANISM ASSY EXPLODED VIEW

## ● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw (M1.4×1.4)	HBA-147	41	Washer	HBF-179
2	Screw	BMZ20P040FMC	42	Lever	CNV1257
3	Bush	CLB-663	43	Spring	CBH1196
4	Spring	CBE1023	44	Motor (Capstan)	CXM1055
5	Spring	CBH-867	45	Chassis Unit	
6	Spring	CBH-837	46	Screw	PMS26P025FMC
7	Arm	CNC2373	47	Spring	CBH-830
8	Holder Unit	CXA3629	48	Screw (M2×2.5)	HBA-175
9	Gear Unit	CXA2088	49	Spacer	
10	Washer	CBF1026	50	Spring	CBL1050
11	Gear	CNY-271	51	Washer	CBF1025
12	Washer	CBF-126	52	.....	
13	Spring	CBH-835	53	.....	
14	E Type Washer	CBG1003	54	.....	
15	Spring	CBH1277	55	Screw	BMZ20P025FMC
16	Pinch Roller Unit	CXA2608	56	Gear	CNV1616
17	Spring	CBH1197	57	Collar	CLA1238
18	E Type Washer	YE25FUC	58	Flywheel	CNR1194
19	Arm	CNV1254	59	Belt	CNT1046
20	Washer	CBF1022	60	Insulator	
21	Collar	CNW-932	61	.....	
22	Spring	CBH-827	62	Cover	
23	Reel Unit	CXA2089	63	Screw	BMZ20P030FMC
24	Spring	CBH-868	64	Screw (M1.7×3)	CBA1125
25	Bracket Unit	CXA1481	65	Holder	
26	F/R Gear	CNW-944	66	Screw (M2×25)	CBA-165
27	Screw	CBA1106	67	Guide	
28	Switch (70 μS, CST IN)	CSN1003	68	Spacer	
29	Screw (M1.7×5.5)	CBA1025	69	.....	
30	P. C. Board	CNP1223	70	Motor Unit (FF/REW. Head Position)	CXA3596
31	Switch (CST SET)	CSN-089	71	Screw	HBA-174
32	Screw (M1.7×3)	CBA-186	72	Bracket Unit	
33	Magnetic Resistive Device	DM-106B	73	Pinch Roller Unit	CXA2609
34	Washer	CBF-046	74	Screw (M2×2.5)	CBA1037
35	Spring	CBH-887	75	Pulley	CNV1255
36	Spring	CBH-886	76	Belt	CNT1047
37	Gear	CNV1075	77	.....	
38	Screw (M2×5)	CBA1054	78	.....	
39	Arm Unit	CXD-389	79	Pulley	CNV1256
40	Arm	CNG-618	80	Screw (M2×5)	CBA1054

Mark No.	Description	Part No.
81	Bracket Unit	
82	Cover	
83	Screw (M1.4×8)	CBA1055
84	Spring	CBE-114
85	Azimuth Rubber	CNY-134
86	Head Unit	CXA3096
87	Spring	CBH-829
88	Gear	CNW-939
89	E Type Washer	YE12FUC
90	Gear	CNV1262
91	Holder Assy	CXA1546
92	Spring	CBH1276
93	Arm	CNV1495
94	E Type Washer	YE15FUC
95	P. C. Board	CNP1227
96	P. C. Board	CNP1738
97	P. C. Board	
98	Connector (6P)	CKS1075
99	Connector (4P)	CKS1073
100	.....	
101	Arm	CNH-004
102	Holder Assy	CXA1548
103	Screw (M2×2)	HBA-209
104	Connector (20P)	CKS-678
105	Screw (M2×2×3)	CBA1022
106	Diode	1S1555
107	P. C. Board	CNP2110
108	Arm	CNV1253
109	Screw (M2×7)	CBA1060
110	Screw (M2×4)	CBA1015
111	Screw (M2×2.5)	CBA1041

A

B

C

D



● Cassette Mechanism Assy

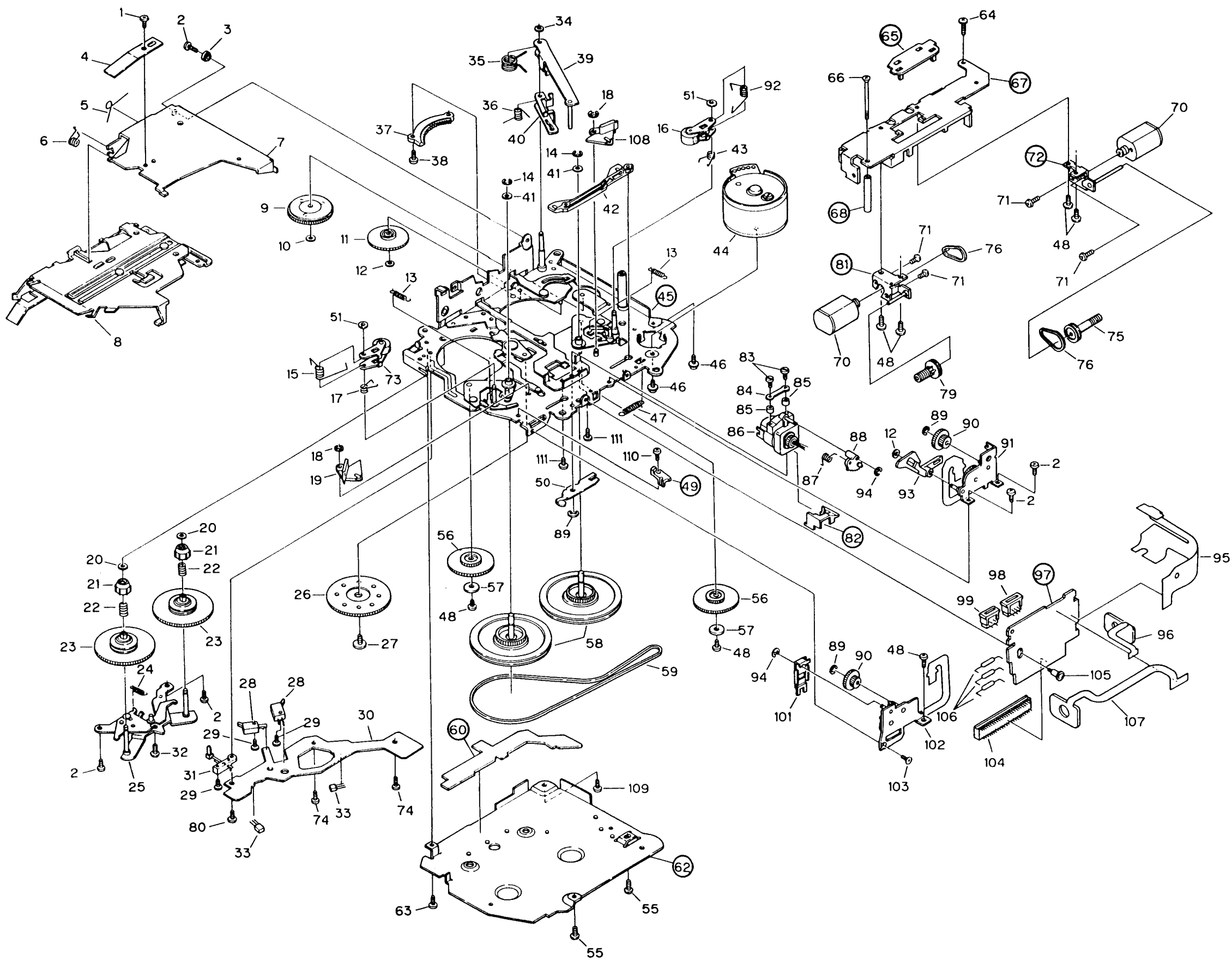


Fig. 24

## 19. PACKING METHOD

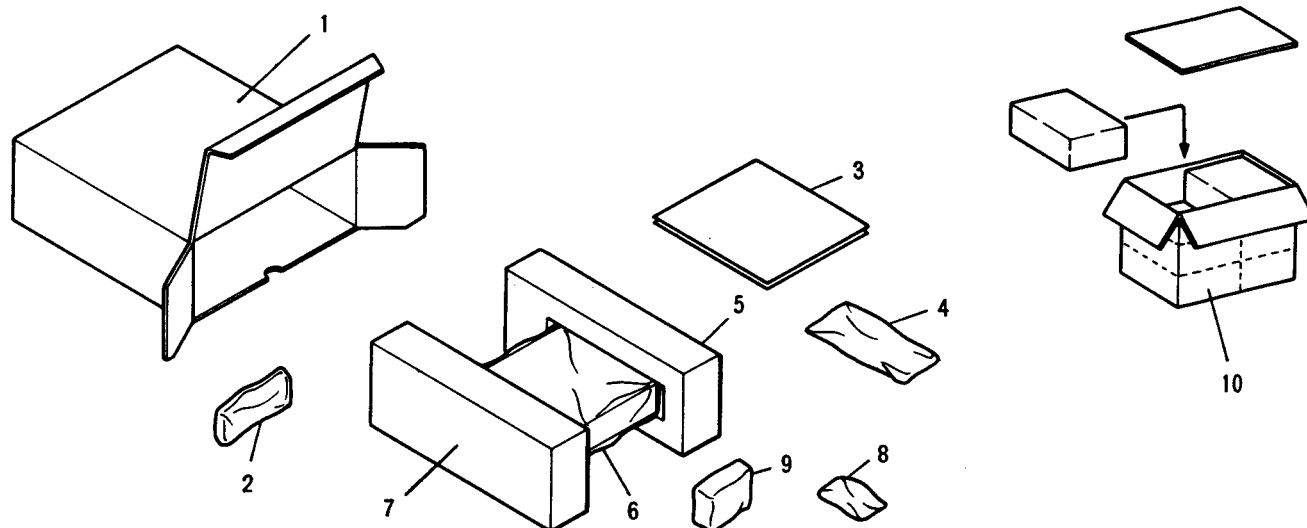


Fig. 25

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Carton	CHG1874	4-6	Screw Assy	
2	Case	CNS2055	4-6-1	Screw (x4)	BM240P080FMC
3-1	Card (US)		4-6-2	Screw (x4)	BM250P080FMC
3-2	Owner's Manual (US)	CRB1188	4-6-3	Screw (x1)	CBA-102
	(English)		4-6-4	Nut (x2)	NF50FMC
	Owner's Manual (ES)	CRD1408	4-6-5	Screw (x1)	CBA1002
	(English, French, Spanish, Arabic)		5	Styrofoam (R)	CHP1360
3-3	Caution Card		6	Cover	CEG1092
4	Accessory Assy	CEA1615	7	Styrofoam (L)	CHP1361
4-1	Screw (x1)	BPZ20P040FZK	8	Remote Control Assy	CXA3731
4-2	Spring (x2)	CBH-865	9	Accessory Assy	CEA1473
4-3	Holder		9-1	Battery	
4-4	Strap	CNF-111	9-2	Fastener	CNM1716
4-5	Bush	CNV1009	9-3	Fastener	CNM1717
			10	Contain Box	CHL1874

## 20. ELECTRICAL PARTS LIST

### NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/8S□□□J, RS1/10S□□□J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

### MISCELLANEOUS

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.	
IC	756			V-16M934-D110		
IC	706			TC9197F		
IC	707			TC74HC393AF		
IC	751			PD00551		
IC	752			MBB1464-12		
IC	753			PD0075		
IC	754			TC74HC04AF		
IC	755			NJM3404AM		
IC	757	758		SM5840CS		
IC	760	765		PD7008		
IC	761	762	763	764	M5238FP	
Q	751			Chip Transistor	2SC2712	
Q	762			Chip Transistor	DTC143EU-23	
D	751			Chip Diode	MA110-1A	
D	752			Chip Diode	MA143-MC	
D	757			Chip Diode	MA141WK-MT	
L	751	752	753	754	Inductor	CTF1102

### RESISTORS

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.				
R	751	754			RS1/16S102J				
R	752				RS1/10S102J				
R	753				RS1/16S473J				
R	755				RS1/16S222J				
R	756				RS1/16S103J				
R	757	758			RS1/16S103J				
R	759	760	761	767	RS1/10S102J				
R	762				RS1/10S682J				
R	763				RS1/16S473J				
R	764				RS1/16S470J				
R	765				RS1/10S392J				
R	766				RS1/10S470J				
R	768				RS1/10S102J				
R	769				RS1/10S473J				
R	770				RS1/16S473J				
R	771	773	775	777	779	781	783	785	RS1/16S203J
R	772	774	776	778	782	784	786	808	RS1/16S203J
R	787	788	789	790	791	792	793	794	RS1/16S473J
R	795	796	797	798					RS1/16S511J
R	799	800	801	802					RS1/16S102J

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.
R	803	817			RS1/10S102J
R	804	805	806		RS1/16S152J
R	807	809	810	818	RS1/16S182J
R	811				RS1/10S223J
R	815				RS1/10S0R0J
R	816				RS1/10S103J
R	819				RS1/16S152J

### CAPACITORS

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.	
C	701				CKSQYB104K25	
C	702	703			CKSQYB104K25	
C	751	756			CKSRYB103K25	
C	752				CCSRCH221J50	
C	753				CKSRYB102K50	
C	754				CKSQYB222K50	
C	755				CKSRYB222K50	
C	757	761			CKSQYB104K25	
C	758				CSZSR15M35	
C	759	760			CCSRCH220J50	
C	762	763			CSZST470M6R3	
C	764				CCSQCH680J50	
C	765	767			CKSQYB104K25	
C	766				CKSQYB104K25	
C	768				CKSQYB104K25	
C	769	779			CKSQYB104K25	
C	770				CKSQYB103K50	
C	772	815			CKSQYB331K50	
C	773	777	791	830	CKSRVF104Z25	
C	774	818			CKSQYB104K25	
C	775	781	785	831	100 μ F/6.3V	CCH1067
C	776	817	827	828	100 μ F/6.3V	CCH1067
C	778	780	826	829		CKSRVF104Z25
C	782	784				CCSQCH150J50
C	783	814				CCSQCH150J50
C	786	792				CCSQCH220J50
C	787	793				CCSQCH220J50
C	788	790				CCSQCH200J50
C	789					CCSQCH200J50
C	794	797	823			CKSQYB562K50

Mark	-----	Circuit Symbol & No.	----	Part Name	Part No.
C	795				CKSQYB562K50
C	796	806 808 810			CKSRVF104Z25
C	798	800 801			CKSQYB822K50
C	799	813			CCSQCH620J50
C	802	804			CCSQCH122J50
C	803				CCSQCH122J50
C	805				CCSQCH122J50
C	809	832			CKSRVF104Z25
C	811				CKSQYB103K50
C	812				CKSQYB472K50
C	820		100 $\mu$ F/6.3V		CCH1067
C	821				CCSQCH200J50
C	822	825			CCSQCH620J50
C	833				CKSQYB822K50
C	834				CKSQYB104K25

Unit Number :  
Unit Name : LCD Unit

#### MISCELLANEOUS

Mark	-----	Circuit Symbol & No.	----	Part Name	Part No.
IC	951	952 953			UPD7228AG
Q	951		Chip Transistor		2SA1162
TH	951		Thermistor		DTN-T204D154K
IL	951	952 953 954 955	Lamp 14V 40mA		CEL1150
IL	956	957	Lamp 8V 60mA		CEL1181
			LCD		CAW1107
			LCD		CAW1108

#### RESISTORS

Mark	-----	Circuit Symbol & No.	----	Part Name	Part No.
R	951	952 953 954 955			RS1/10S102J
R	956				RS1/10S102J
R	957				RS1/10S224J
R	958				RS1/10S104J
R	959				RS1/10S333J

#### CAPACITORS

Mark	-----	Circuit Symbol & No.	----	Part Name	Part No.
C	951	952 953 954 955			CKSQYB473K25
C	956	957 958 959 960			CKSQYB104K25

Unit Number :  
Unit Name : Control P.C. Board

#### MISCELLANEOUS

Mark	-----	Circuit Symbol & No.	----	Part Name	Part No.
IC	901				S-80743AN-D7
IC	902				BX-1393
IC	903				PD4274A
D	901		Chip Diode		MA151WK-MT
D	902	903 904 905 906	Chip Diode		MSM123
L	901	902	Inductor		CTF1104
X	901				CSS1071

#### RESISTORS

Mark	-----	Circuit Symbol & No.	----	Part Name	Part No.
R	901	902			RS1/10S103J
R	903	904 922 923			RS1/10S473J
R	905	906 907 908 909 910 911 912			RS1/10S472J
R	913				RS1/10S103J
R	914				RS1/10S220J
R	915	916 917 918 919			RS1/2S222J
R	921	924			RS1/10S473J

#### CAPACITORS

Mark	-----	Circuit Symbol & No.	----	Part Name	Part No.
C	901				CKSQYB103K50
C	904	905 906 907 908 909 910 911 912			CKSQYB471K50
C	913	915 917			CSZST220M16
C	914	916			CKSQYB473K25

Unit Number :  
Unit Name : Switch P.C. Board

Mark	-----	Circuit Symbol & No.	----	Part Name	Part No.
S	601		Switch(RESET)		CSG1034

Unit Number :  
Unit Name : Audio Unit

Audio Unit
Consists of
• Audio P.C. Board
• EVR P.C. Board

#### MISCELLANEOUS

Mark	-----	Circuit Symbol & No.	----	Part Name	Part No.
IC	251				CWV1014
IC	451				KHA175A
IC	551				PM2002
IC	601				PD4273A
IC	602				MSM82C55A-2GS
IC	603				CKX5816M-15L
IC	604				PD6062B
IC	605				TC74HC245AF
IC	606	607			TC4581F
IC	608				S-80743AN-D7
IC	651				PA3022
IC	701	702			UPC4570G
IC	703				TD6726N
IC	704				UPC4570G
IC	951				KHAA03
IC	952				NJM79L05UA
IC	953				NJM78M05A
IC	954				AN6540
IC	955				NJM78L05UA
IC	956				M54546AL
Q	301	302	Chip Transistor		DTC343TK
Q	303		Chip Transistor		DTA114EK
Q	304		Chip Transistor		2SC2712
Q	501	509 510	Chip Transistor		DTC114TK
Q	502	504			2SB1243

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.	Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.					
Q	503	961		Chip Transistor	2SC3295	VR	551	552		Semi-fixed 10kΩ (B)	CCP1019					
Q	505				UN4122	VR	601			Semi-fixed 1kΩ (B)	CCP1013					
Q	506	955		Chip Transistor	1MH4	VR	701	702	705	706	Semi-fixed 470Ω (B)	VRTB4VS471				
Q	508	957		Chip Transistor	DTA114EX	VR	703	704			Semi-fixed 1kΩ (B)	VRTB4VS102				
Q	511	703		Chip Transistor	DTA114EK	MIC	551				Microphone Assy	CPM1003				
Q	512			Chip Transistor	2SC2712	Z	601				Surge Absorber	ERZ-C070K220				
Q	513	515	952	Chip Transistor	1MD2	BZ	601				Buzzer	CPV1010				
Q	551			Chip Transistor	2SK209	IL	601				Lamp 14V 40mA	CEL1159				
Q	552			Chip Transistor	2SC4116	EF	951				EMI Filter	CCG1006				
Q	601			Chip Transistor	DTC114TK	EF	952	954			EMI Filter	CCG1003				
Q	602			Chip Transistor	DTA114EK	RESISTORS										
Q	603	958	963	Chip Transistor	DTC114TK	Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.					
Q	604			Chip Transistor	2SA1162	R	251	252			RS1/10S183J					
Q	605			Chip Transistor	DTA114TK-94	R	253				RS1/10S393J					
Q	606	608		Chip Transistor	2SC3295	R	301	302			RS1/10S472J					
Q	607	609		Chip Transistor	DTC114TK	R	303	304	619		RS1/10S473J					
Q	610			Chip Transistor	2SD601A	R	305	306			RS1/10S473J					
Q	651	652		Chip Transistor	2SC2712	R	307				RS1/10S103J					
Q	701	702		Chip Transistor	DTC343TK	R	451	452	453	454	960	RS1/10S102J				
Q	851	853	854	Chip Transistor	2SD1757K	R	501	503	520	608	954	964	RS1/10S473J			
Q	852			Chip Transistor	2SD1757K	R	502	681					RS1/2S681J			
Q	855			Chip Transistor	DTA114EK	R	504	513	514	515	519		RS1/8S222J			
Q	951				2SD1684	R	505	507	508				RS1/10S103J			
Q	954				2SB1238	R	506						RS1/10S122J			
Q	959				2SD2037	R	509	636	963				RS1/10S104J			
Q	960			Chip Transistor	2SA1036K	R	516	610	639	715	716	966	967	RS1/10S102J		
Q	962				2SD1864	R	517							RS1/10S222J		
D	251			Chip Diode	MA151A-MA	R	521	522	523	603	604			RS1/10S472J		
D	501			Chip Diode	MA8075H	R	524	525						RS1/10S473J		
D	502	503			ERA15-02VH	R	551	552	553	554				RS1/10S124J		
D	504			Chip Diode	MA8068H	R	555							RS1/10S472J		
D	505			Chip Diode	MA8068L	R	556	557						RS1/10S153J		
D	506	955			ERA15-02VH	R	558	559	563					RS1/10S472J		
D	507	510	613	956	Chip Diode	MA151WK-MT	R	560						RS1/10S472J		
D	509	551		Chip Diode	MA151K-MH	R	561							RS1/10S684J		
D	552	601	602	604	Chip Diode	MA110-1A	R	562						RS1/10S154J		
D	603			Chip Diode	MA151A-MA	R	564							RS1/10S104J		
D	605	609		Chip Diode	MA110-1A	R	565	567	570	574	614			RS1/10S103J		
D	610			Chip Diode	MA151A-MA	R	566							RS1/10S102J		
D	611			Chip Diode	MA151WA-MN	R	568							RS1/10S562J		
D	616	651		Chip Diode	MA151A-MA	R	569							RS1/10S183J		
D	871	872		Chip Diode	MA151WA-MN	R	571							RS1/10S474J		
D	951			Chip Diode	MA8100L	R	572							RS1/10S222J		
D	953	954	957	Chip Diode	MA8056H	R	573							RS1/10S683J		
D	958				ERC05-108	R	575							RS1/10S472J		
L	601	602	603	604	Ferri-Inductor	LAU4R7K	R	576						RS1/10S471J		
L	701	755		Inductor	CTF1102	R	590							RS1/10S682J		
L	702			Inductor	LAUR22M	R	601	602	611	635	637	641	678	679	682	RS1/10S473J
L	954			Inductor	CTF1104	R	605	606	628							RS1/10S471J
L	955			Inductor	CTF1102	R	607									RS1/10S474J
TC	601			Trimmer	CCG1002	R	609									RS1/10S223J
IB	601				CWW1302	R	612	685	686	687						RS1/10S474J
IB	602				CWW1147	R	613	624	625	626						RS1/10S471J
IB	603				CWW1185	R	615	643								RS1/10S103J
IB	604				CWW1128	R	616	617	618	622	623					RS1/10S473J
IB	605				CWW1292	R	621									RS1/10S102J
IB	606				CWW1291	R	629	630	631	632	633	634	650	680		RS1/2S222J
X	601			Crystal Resonator	CSS1023											
X	701			Crystal Resonator	CSS1063											
VR	251	252		Semi-fixed 10kΩ (B)	CCP1019											

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.	Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.				
R	638	640	642	644	RS1/10S472J	C	501			CKSQYB103K25					
R	645	646	647	648	RS1/10S221J	C	502			CEA010M50LS2					
R	651	652	653	654	RS1/10S222J	C	503			CEA010M50LS2					
R	655	657			RS1/10S472J	C	552	562		CEA220M6R3LS					
R	656				RS1/10S562J	C	553	554		CEALNP100M16					
R	658				RS1/10S392J	C	555			CKSQYB823K25					
R	659				RS1/10S684J	C	556			CEALNP220M6R3					
R	670	671	672	673	RS1/10S473J	C	557	569		CEAR68M50LS2					
R	675	677			RS1/10S473J	C	558	560	561	574	CEA100M16LS2				
R	676				RS1/10S104J	C	559	564	565	567	568	CEA470M16LS			
R	684				RS1/10S104J	C	563	566				CEA101M10LS			
R	688				RS1/10S682J	C	601	610				CKSQYB473K25			
R	689				RS1/10S103J	C	602	963	970			CKSQYB473K25			
R	690				RS1/10S102J	C	603	604	966	968		CEA470M16LS			
R	691				RS1/10S473J	C	605					CCSQCH330J50			
R	701	702			RS1/10S104J	C	607	813	814			CKSQYB473K25			
R	703	704			RS1/10S203J	C	609					CKSQYB473K25			
R	705	706			RS1/10S393J	C	611					CEA2R2M50LS2			
R	707	708			RS1/10S124J	C	651					CKSQYB392K50			
R	709	710	711	712	RS1/10S102J	C	652					CEAR15M50LS2			
R	713	714			RS1/10S102J	C	653					CCSQCH330J50			
R	717	718	719	720	RS1/10S222J	C	654	655	656	657	658	659	CKSQYB473K25		
R	721	722			RS1/10S221J	C	660						CEAR68M50LS		
R	723	724			RS1/10S392J	C	661						CKSQYB473K25		
R	727	728	731	732	RS1/10S223J	C	662						CEA470M6R3LS		
R	735	736	737	738	RS1/10S102J	C	663						CEA470M6R3LS		
R	739	740			RS1/10S152J	C	664						CEA471M16L2		
R	741	742			RS1/10S272J	C	701	702					CCSQCH220J50		
R	743				RS1/10S123J	C	703	704					CKSQYB183K25		
R	744				RS1/10S221J	C	705	706					CKSQYB153K25		
R	747	748			RS1/10S224J	C	707	708		8200PF			CCG1016		
R	749	750			RS1/10S433J	C	709	710					CCSQSL561J50		
R	751				RS1/10S221J	C	711	712					CKSQYF104Z25		
R	863				RS1/10S102J	C	713	714					CCSQCH180J50		
R	864	865	866		RS1/10S102J	C	715	716					CCSSL102J50		
R	867	868	869	870	RS1/10S223J	C	717	718					CCSQCH271J50		
R	871	873	874		RS1/10S222J	C	719	720	721	722	730	732	736	741	CKSQYB473K25
R	872				RS1/10S222J	C	723	724							CKSQYB103K25
R	881	882	883	884	RS1/10S0R0J	C	727	728							CEALNP470M6R3
R	885	886	887		RS1/10S0R0J	C	731								CEA220M16LS
R	951				RS1/8S2R2J	C	733								CKSQYB103K25
R	952				RS1/10S681J	C	734								CCSQCH100D50
R	953	965			RS1/8S222J	C	735								CCSQCH020C50
R	955				RS1/10S103J	C	737								CEA470M16LS
R	957				RS1/10S472J	C	745	746		22 μ F/6.3V					CCH1097
R	958	959			RS1/8S4R7J	C	812								CEA330M16LS
R	961				RS1/10S222J	C	851	852	865	866					CKSQYB104K25
R	962				RS1/10S681J	C	855	856	857	858		22 μ F/10V			CCH1098
R	968				RS1/10S102J	C	859	860	861	862					CCSQSL182J50

## CAPACITORS

Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.	Mark	-----	Circuit Symbol & No.	-----	Part Name	Part No.				
C	251	252			CCSQSL391J50	C	952	958	972	975	CEA101M10LS				
C	253	254		22 $\mu$ F/16V	CCH1102	C	953	955			CEHAQ470M25				
C	255	256	303	304	4.7 $\mu$ F/35V	C	954				CEHAQ2R2M50				
C	257				CCH1100	C	956				CEHAQ101M16				
C	258			10 $\mu$ F/16V	CEA101M10LS	C	957				CSZSR3R3M16				
					CCH1101	C	959	961	962	964	965	967	969	978	CKSQYB473K25
C	259				CKSQYB103K25	C	960	971	977						CSZST220M16
C	301	302		1 $\mu$ F/50V	CCH1099	C	973	974							CKSYB473K25
C	305				CEA100M16LS2	C	976				3300 $\mu$ F/16V				CCH1018
C	306				CEA470M16LS	C	979								CSZST470M6R3
C	307				CEA4R7M35LS	C	980	981							CCSQCH150J50
						C	982								CCSQCH150J50

Unit Number :  
Unit Name : Panel P.C. Board

Mark	===== Circuit Symbol & No.	==== Part Name	Part No.
D	614 615	LED	LN31GC6V

Unit Number :  
Unit Name : Drive Assy

Mark	===== Circuit Symbol & No.	==== Part Name	Part No.
S	610 611	Switch (OPEN, CLOSE)	CSN1012
M	610	Motor	CXM1024

Unit Number :  
Unit Name : Switch P.C. Board (Cassette Mechanism Assy)

Mark	===== Circuit Symbol & No.	==== Part Name	Part No.
S	1	Switch (CST SET)	CSN-089
S	2 3	Switch (CST IN, 70 $\mu$ s)	CSN1003
MR	1 2	Magnetic Resistive Device	DM-106B

Unit Number :  
Unit Name : P.C. Board Unit

Mark	===== Circuit Symbol & No.	==== Part Name	Part No.
D	1 2 3		1S1555

#### MISCELLANEOUS

Mark	===== Circuit Symbol & No.	==== Part Name	Part No.
IL	602	Lamp 14v 40mA	CEL1148
HD	1	Head Unit	CXA3096
M	1 2	Motor Unit (Head, FF/REW)	CXA3596
M	3	Motor (CAPSTAN)	CXM1055
S	601	Switch (RESET)	CSG1034
S	602	Switch (CLOSE)	CSN1012

# Service Manual



ORDER NO.  
**CRT1352**

MULTI-CD/TUNER CONTROL DSP DECK

# KEX-M900RDS

EW

- This additional service manual is designed to be used together with Model KEX-M900/US Service Manual (CRT1335). Refer to it for finding parts numbers, etc. which are not shown in this manual.

## CONTENTS

1. CHASSIS EXPLODED VIEW.....	2	4. SCHEMATIC CIRCUIT DIAGRAM.....	6
2. PACKING METHOD.....	2	5. CONNECTION DIAGRAM.....	9
3. ELECTRICAL PARTS LIST.....	3		

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FS FEB. 1991 Printed in Japan



## 1. CHASSIS EXPLODED VIEW

(P a g e 6 2 )

NSP:Non spare part

	KEX-M900/US	KEX-M900RDS/EW	
Mark No. Description	Part No.	Part No.	Note
66 Button	CAC2603	CAC2605	B → TA CLOCK → AF
67 Button	CAC2604	CAC2606	
68 Grille Unit	CXA3737	CXA3734	
● 82 Grille Assy	CXA3719	CXA3716	
127 Chassis Unit	NSP	NSP	
133 Cord Assy	CDE3051	CDE3141	
143 Cord Assy	CDE3048	CDE3071	
● 147 Audio Unit	CWM2381	CWM2376	
156 Remote Control Assy	CXA3731	CXA3730	

## 2. PACKING METHOD

(P a g e 7 0 )

NSP:Non spare part

	KEX-M900/US	KEX-M900RDS/EW	
Mark No. Description	Part No.	Part No.	Note
1 Carton	CHG1874	CHG1980	
3-1 Card	NSP	NSP	
3-2 Owner's Manual	CRB1188	CRD1406	
Owner's Manual	----	CRD1407	
4 Accessory Assy	CEA1615	CEA1641	
4-6 Screw Assy	NSP	NSP	
5 Styrofoam (R)	CHP1360	CHP1400	
7 Styrofoam (L)	CHP1361	CHP1401	
8 Remote Control Assy	CXA3731	CXA3730	
10 Contain Box	CHL1874	NSP	

\*Owner's Manual

Part No.	Language
CRD1406	English, French, German, Spanish
CRD1407	Swedish, Norwegian, Dutch, Italian, Finnish

# 5. CONNECTION DIAGRAM

IC. Q Q604		VR252 VR251		VR702 VR704		VR705 VR703		VR706 VR703		IC601		VR601	
ADJ													

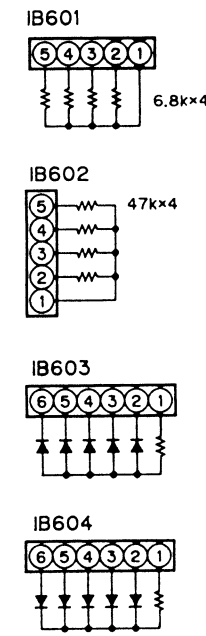
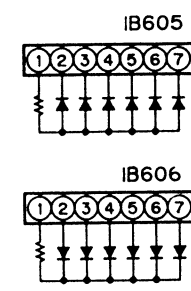
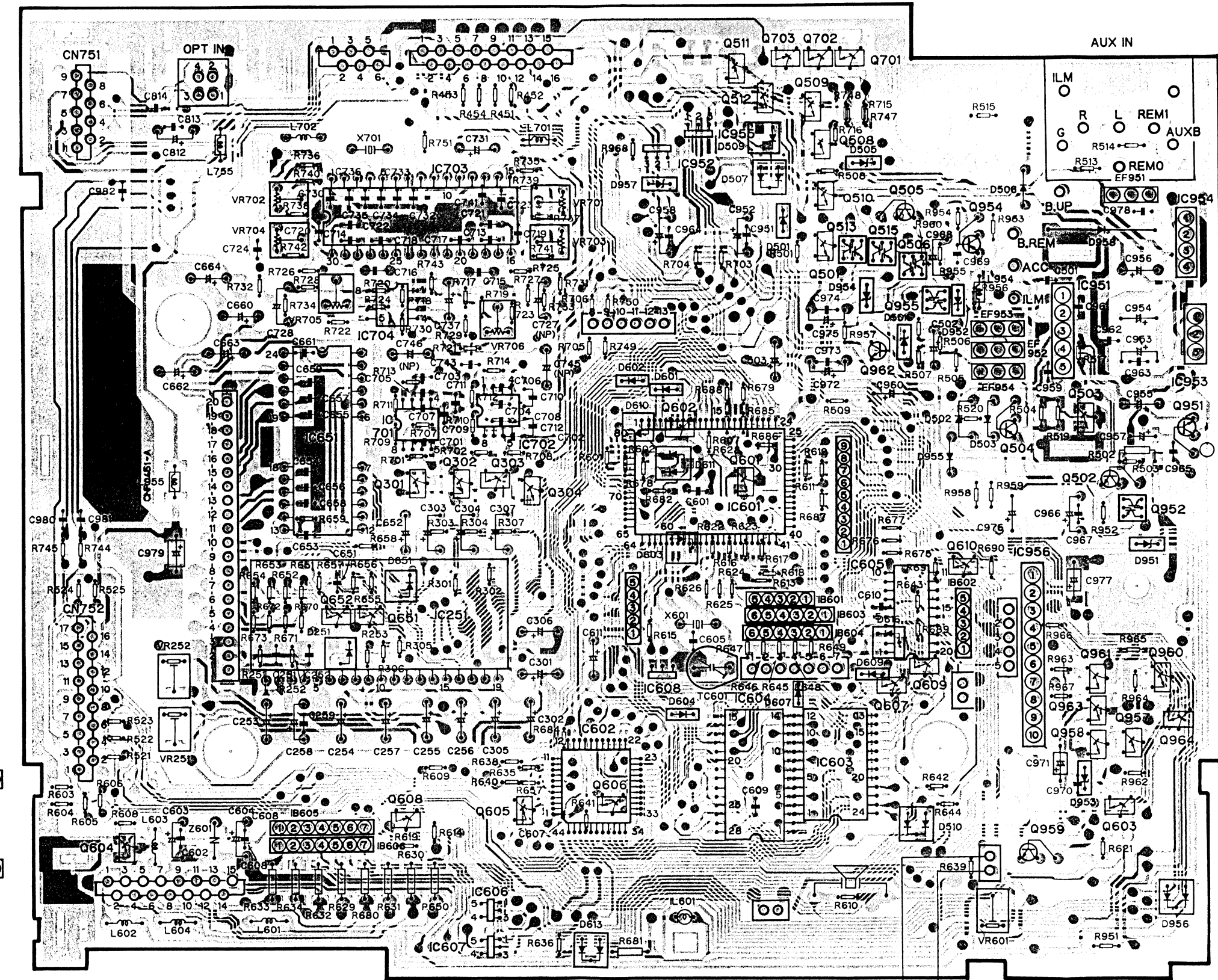
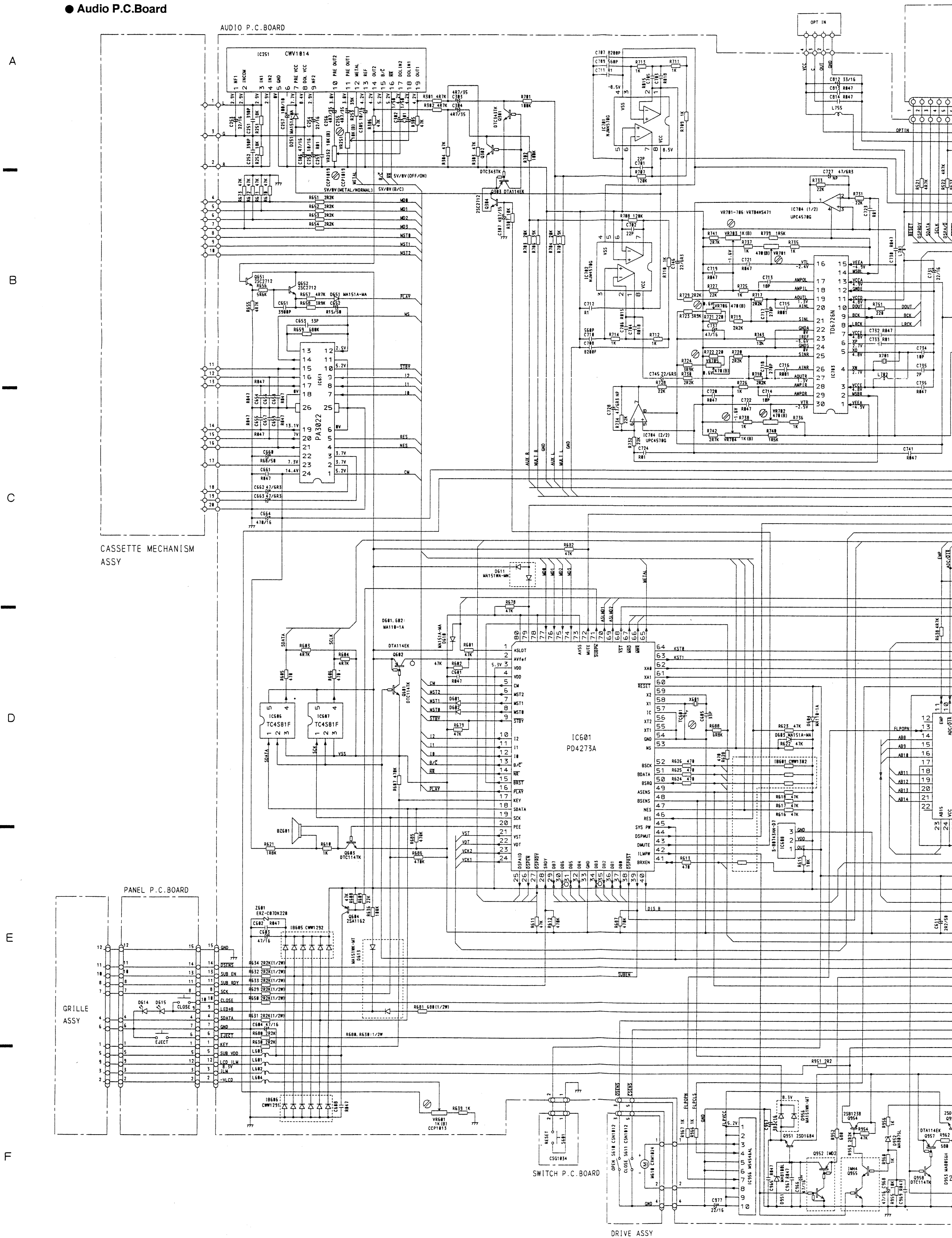


Fig. 2

#### 4. SCHEMATIC CIRCUIT DIAGRAM

## ● Audio P.C.Board



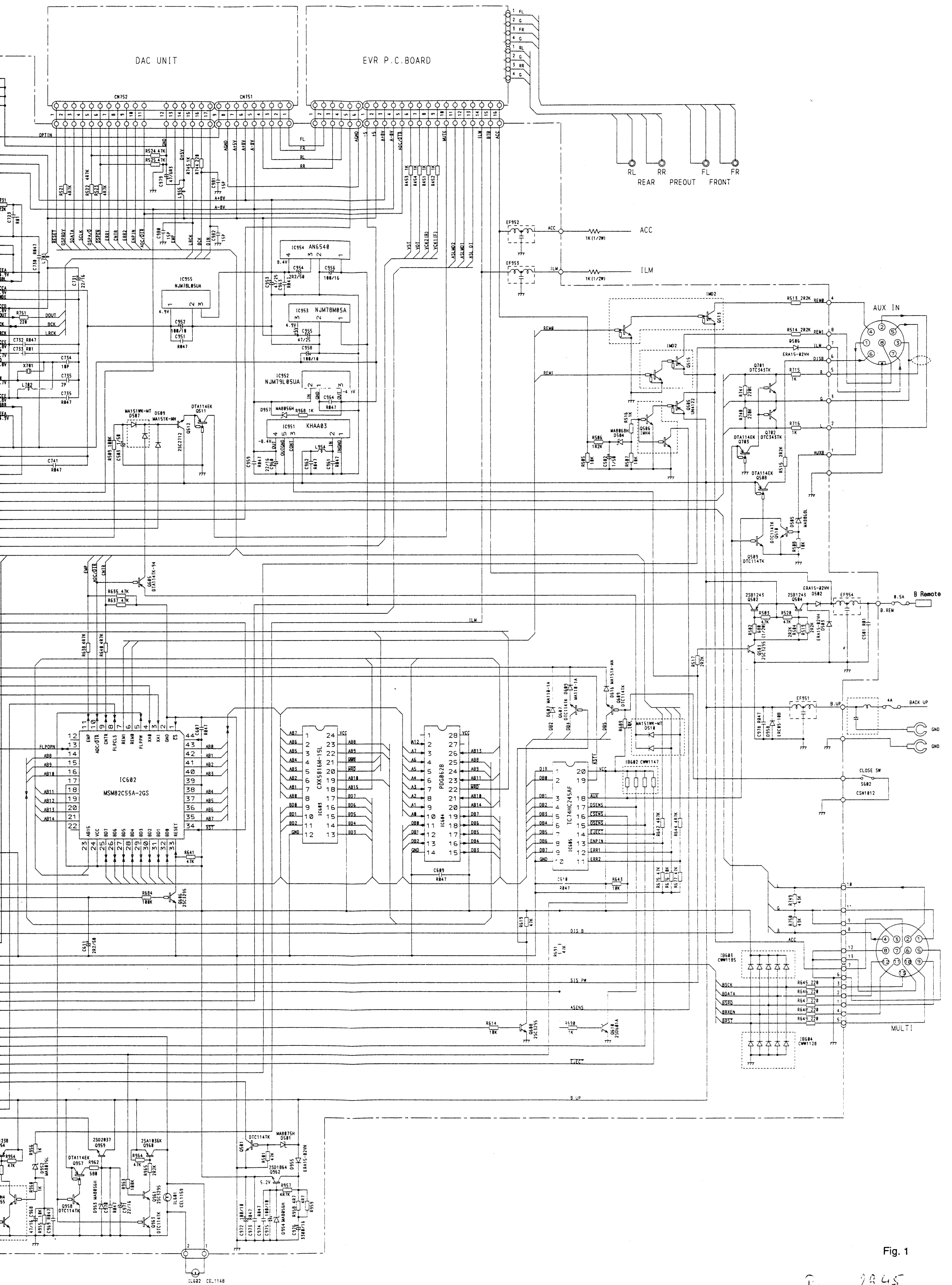


Fig. 1

From 2845

### 3. ELECTRICAL PARTS LIST

(Page 71)

Audio Unit

			KEX-M900/US	KEX-M900RDS/EW	
Circuit Symbol & No.			Part No.	Part No.	Note
D	605	Chip Diode	MA110-1A	----	
D	607	Chip Diode	----	MA110-1A	
D	952	Chip Diode	----	MA8075L	
R	956		----	RS1/10S102J	
R	961		RS1/10S222J	----	

# Service Manual

**ORDER NO.  
CRT-468-0**

**CASSETTE MECHANISM ASSEMBLY**

## **CX-156/A, CX-156/B**

- This service manual is for cassette mechanism assembly used in car stereo components.
- Refer to the service manual for individual models for details on sections other than the cassette mechanism assembly.

Model	Service Manual	Cassette Mechanism Assembly
FX-K5/EW	CRT-469	CX-156/A
FX-K5B/EW		CX-156/A
FX-K5SDK/WG		CX-156/A
FEX-55/US, CA, CS	CRT-471	CX-156/A
FEX-50/ES	CRT-470	CX-156/A
KX-E60/EW	CRT-476	CX-156/B

Model	Service Manual	Cassette Mechanism Assembly

## CONTENTS

1. REPLACEMENT OF PARTS IN CASSETTE MECHANISM.....	1	4. EXPLODED VIEW .....	10
2. MECHANISM DESCRIPTION .....	4	5. CONNECTION DIAGRAM.....	13
3. ADJUSTMENT .....	8	6. SCHEMATIC CIRCUIT DIAGRAM .....	14
		7. ELECTRICAL PARTS LIST .....	14

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# 1. REPLACEMENT OF PARTS IN CASSETTE MECHANISM

## • Belt and capstan motor (M3) replacement

1. Remove the four screws and the cover. (Fig. 1)
2. The belt in Fig. 2 can be replaced. (Be sure that the belt is not greased and not twisted.)
3. To replace the capstan motor, remove the two screws shown in Fig. 2.

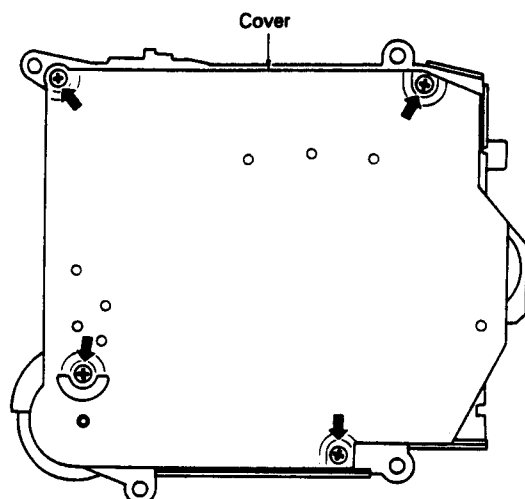


Fig. 1

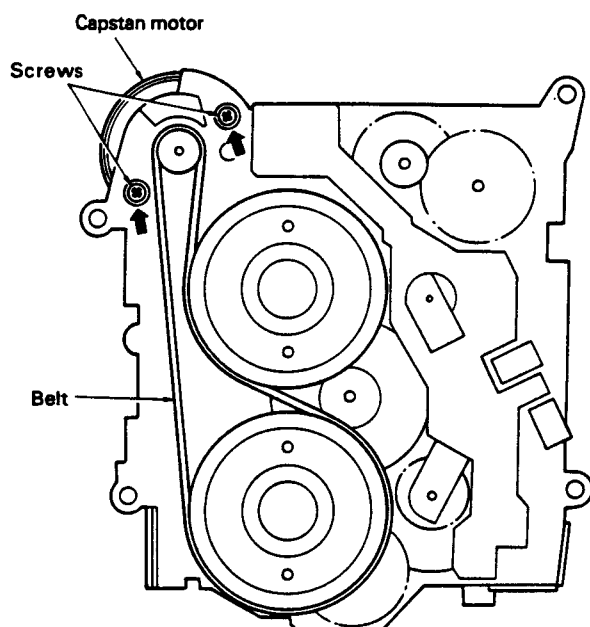


Fig. 2

## • Cassette holder removal

1. Turn the capstan motor until the cassette holder drops down. (Do not turn the flywheel directly by hand.)
2. Remove the screw labeled "B", the collar and the spring.
3. Remove unit "A" and the cassette holder "D" and "E".

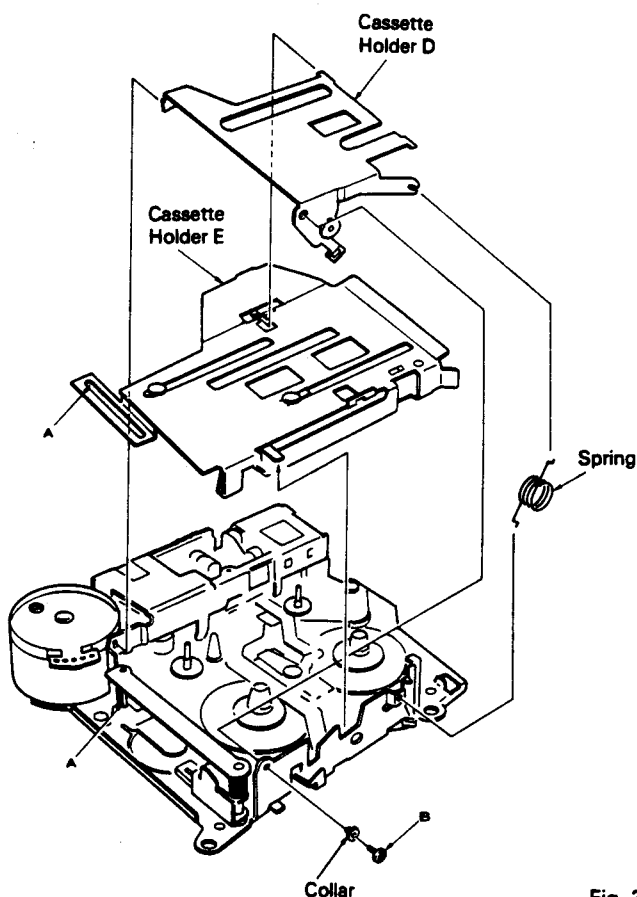


Fig. 3

### • Head unit replacement

1. Remove the washer and spring.
2. Remove the screw labeled "F", and the head unit can be removed in the opposite direction.
3. Be careful of the following point during reassembly.
  - Put the head unit pins through the lever holes. (One in front and one in back.)

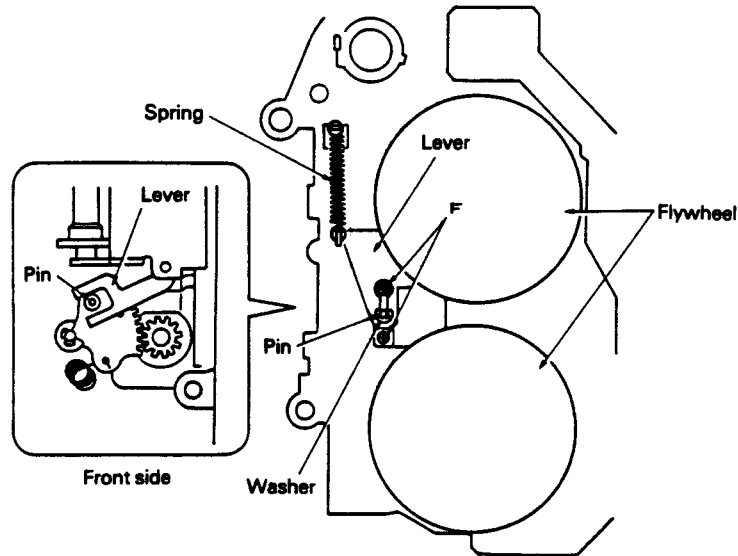


Fig. 4

### • Sub-motor replacement (M1 and M2)

1. Remove the two screws labeled "G" and remove the P.C. board unit.
2. The sub-motor can be removed by removing the three screws indicated by the arrows.
3. Sub-motor 2 (for switching the FF/REW gear) can be replaced when the spacer has been removed. (The motor fits very snugly, so some force must be used to remove it.)
4. Sub-motor 1 (for turning and positioning the head) can be replaced by removing the belt, lock washer, pulley and two screws labeled "J".

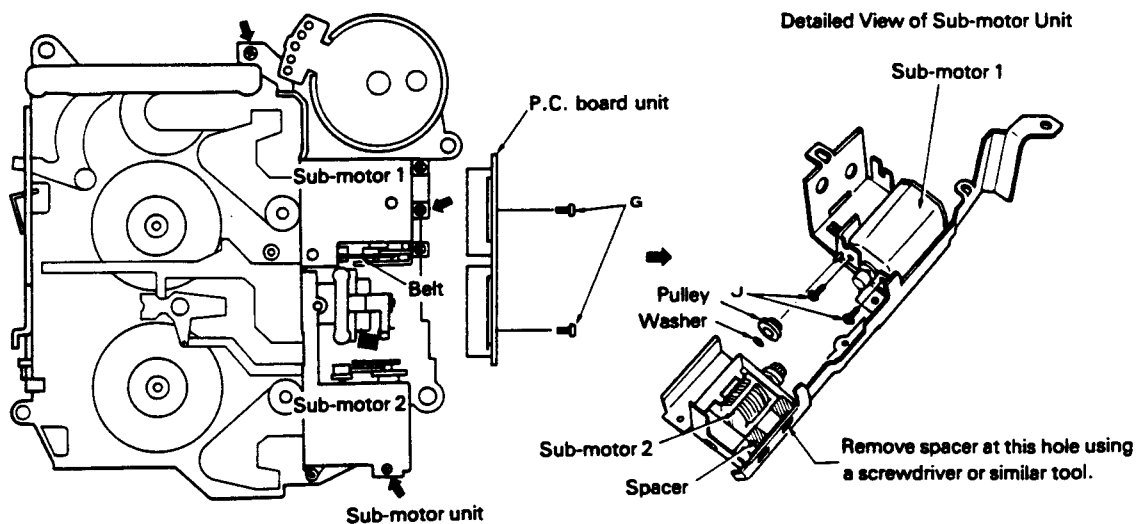


Fig. 5



• **Reel unit replacement**

1. Remove the six screws and the switch P.C. board.
2. Remove the screw labeled "K" and the collar and free the FF/REW idler gear.
3. The reel assy can be replaced by removing the two screws labeled "L" and removing the reel unit.

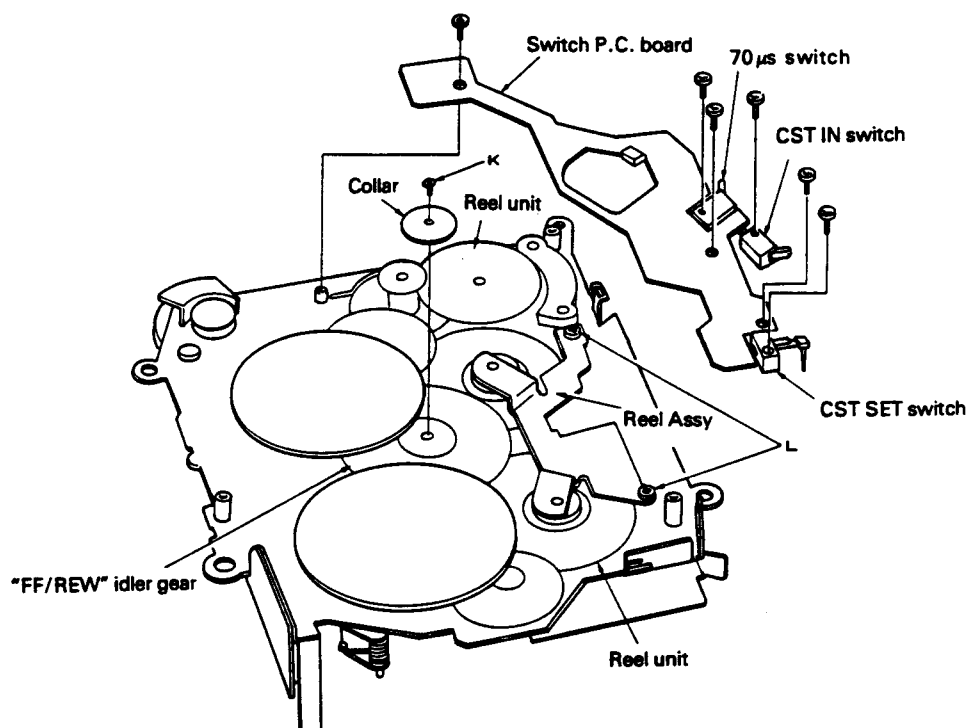


Fig. 6

## 2. MECHANISM DESCRIPTION

Cassette mechanism assy for CX-156/A is used in this mechanism description.

### 1. Outline of Mechanism

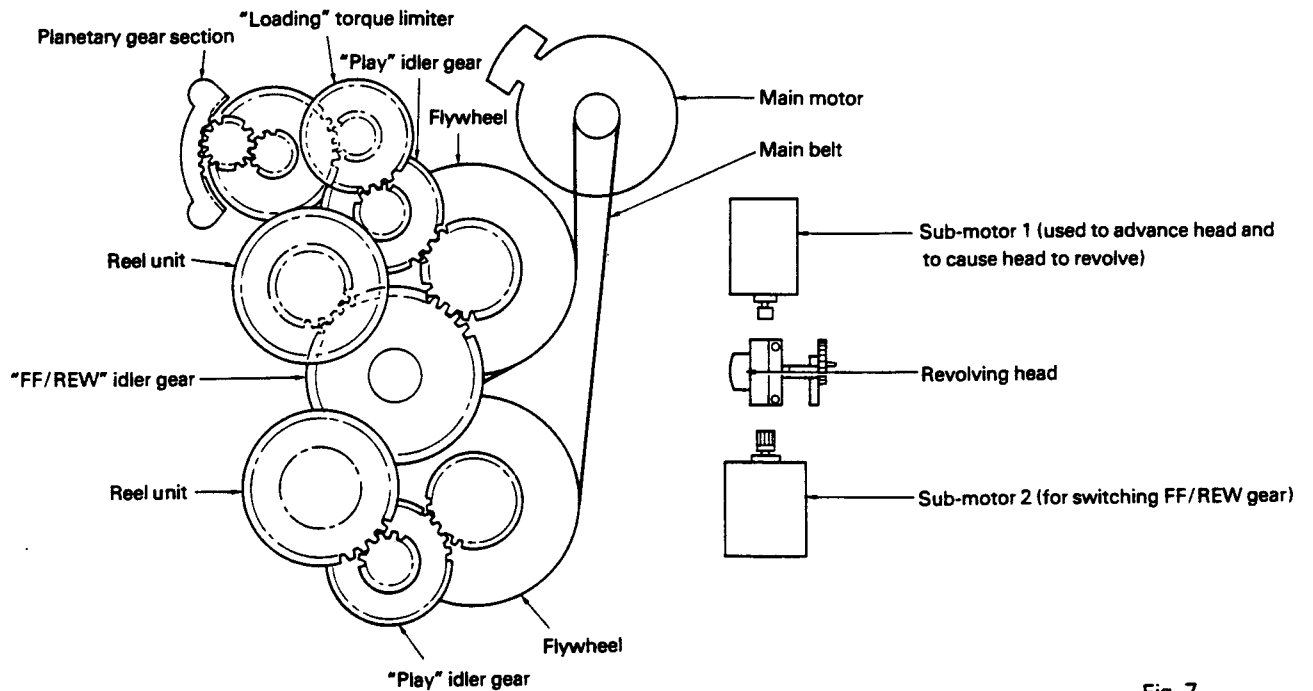


Fig. 7

### 2. Loading/Eject Function

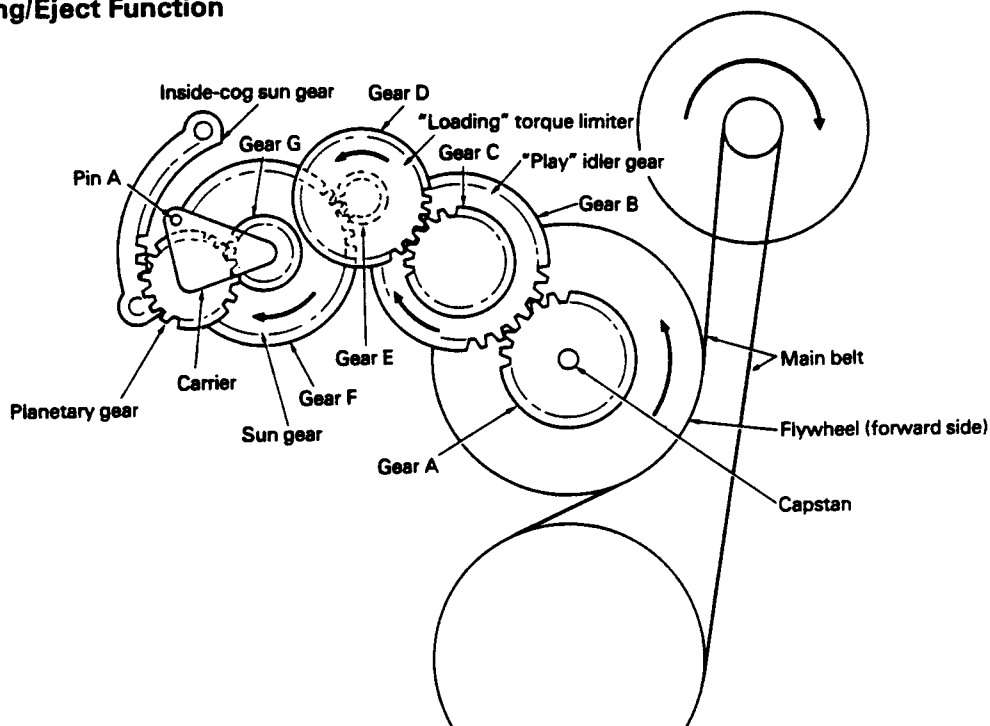


Fig. 8

### 3. Cassette Tape Load and Eject Mechanism

#### • Cassette tape loading operation

1. Push the cassette tape lightly in the direction indicated by the arrow. (As shown in Fig. 10, arm "A" and arm "B" connect to spring "A". These are also connected to common axis shaft "A", which is attached to the chassis surface and acts as a swivel. Pin "A", which is caulked to the planetary gear unit carrier, goes through the chassis and fits into the oblong hole of arm "B". Because pin "A" won't move as long as the capstan motor isn't moving, arm "B" won't move either.)
2. When a cassette tape is loaded, arm "A" moves in the direction indicated by the arrow and spring "A" loosens. Lever "A" also moves in the direction indicated by the arrow, and the catch at left of the lever releases arm "C". Arm "C" then turns counterclockwise and opens the CST IN switch. The capstan motor then begins turning forward.
3. The carrier then moves clockwise because the planetary gear moves along the inside-cog sun gear. Pin "A" which is caulked to the carrier also moves in the same direction. (Fig. 11) The movement of pin "A" is causing arm "B" to move counterclockwise. Arm "A" turns in the same fashion and the "A" unit of lever "A" draws the cassette tape in. (Fig. 9)

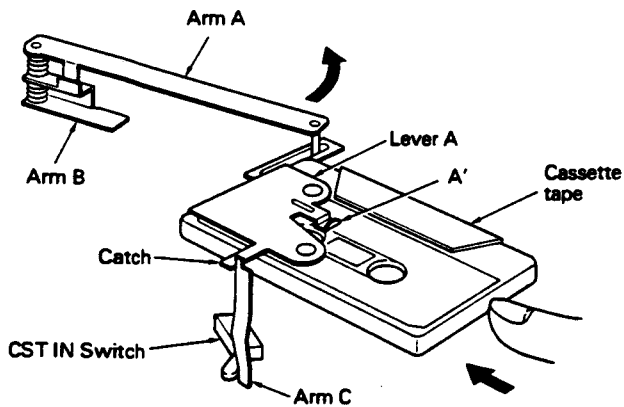


Fig. 9

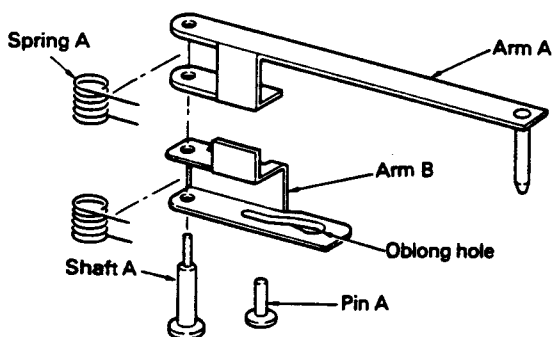


Fig. 10

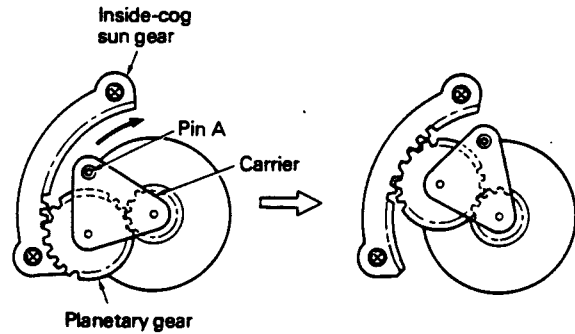


Fig. 11

4. The oblong hole of arm "B" is as shown in Fig. 12. The cassette tape draw-in process will be complete when the pin "A" degree of rotation is  $\theta$ . Arm "B" will not move while the degree of rotation is  $\theta'$ .

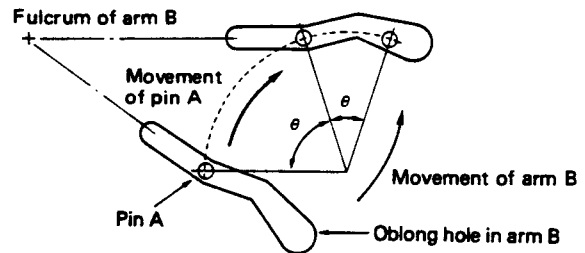


Fig. 12

5. As shown in Fig. 13, arm "C" (caulked to the chassis swivel) is fixed to pin "A" and when the degree of rotation is  $\theta$  arm "C" is stationary, and when it is  $\theta'$  arm "C" turns clockwise.

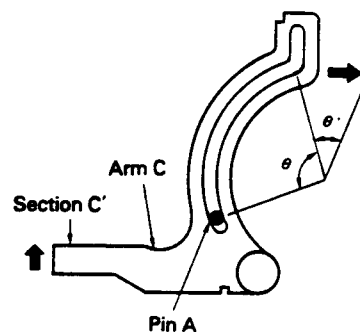


Fig. 13

6. As shown in Fig. 14, the "C'" unit of arm "C" connects to the cassette arm (which suspends the cassette tape) through spring "C". The arm "C" movement described above in paragraph five makes the "C'" unit move in the direction indicated by the arrow in Fig. 14. The cassette arm pushes down holder "A" by means of spring "B". The "C'" unit is released when holder "A" drops down.
7. In order for the capstan motor to keep turning forward, the planetary gear disengages from the inside-cog sun gear and becomes free.

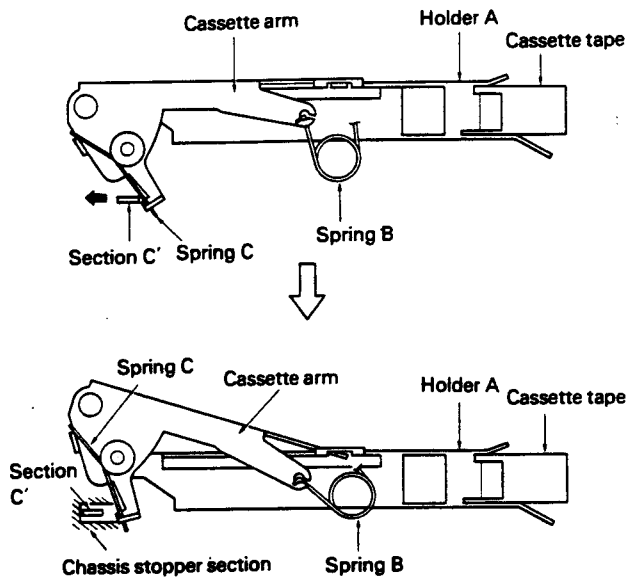


Fig. 14

### • Eject operation

1. Turning on the eject switch reverses the capstan motor. As shown in Fig. 15, spring "D" places slight friction on the planetary gear which causes it to engage with the inside-cog sun gear. The cassette tape is ejected following an operation opposite to the loading operation.

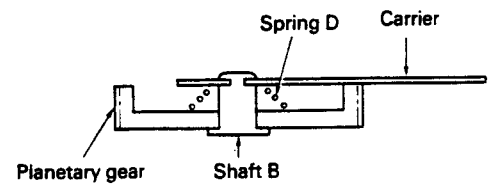


Fig. 15

### 4. Head Turning and Head Positioning Operations (during forward play)

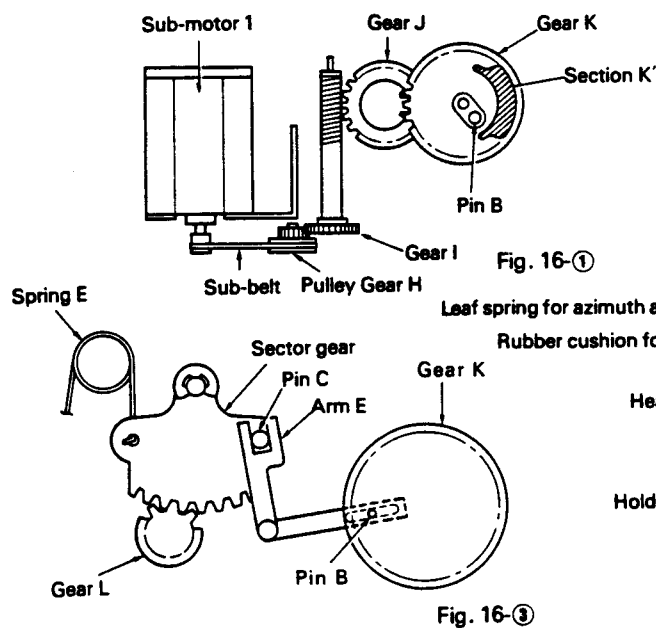


Fig. 16-①

Fig. 16-③

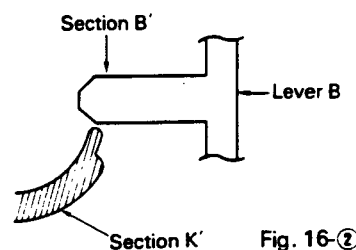


Fig. 16-②

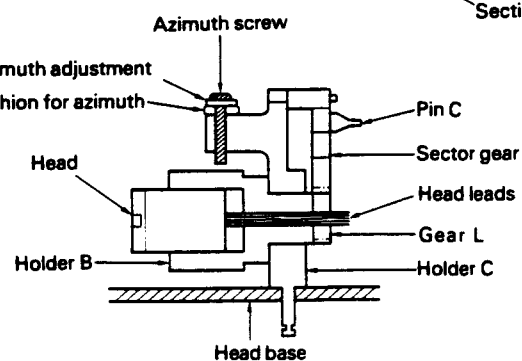


Fig. 16-④

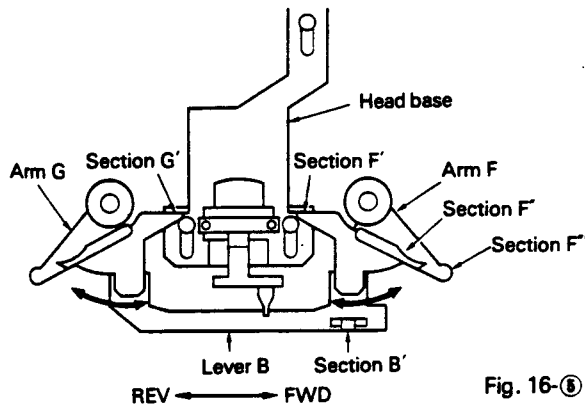


Fig. 16-⑥

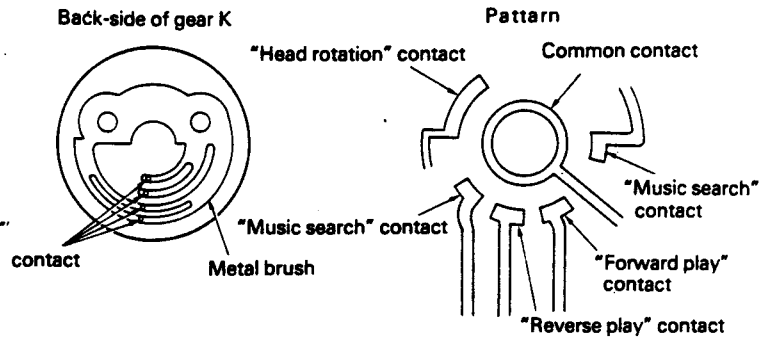


Fig. 16-⑦

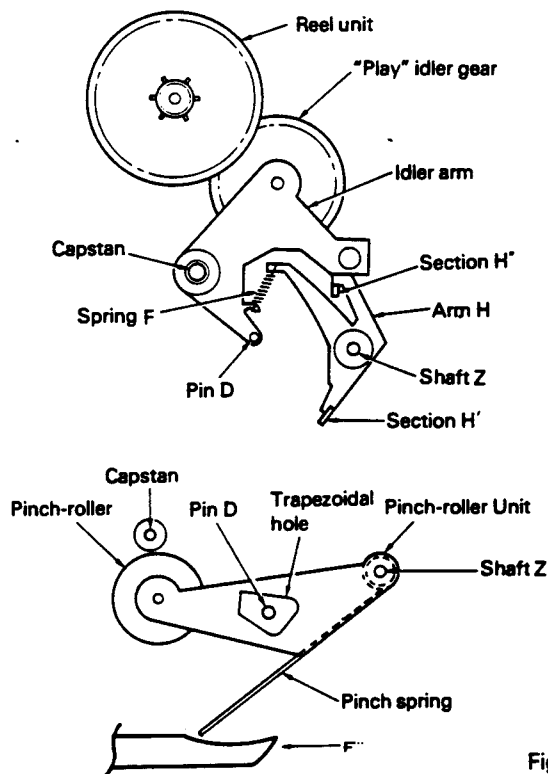


Fig. 17

1. The sub-belt from sub-motor 1 goes through pulley gear "H", gear "I", gear "J" and turns gear "K". Head turning and head base positioning take place using the "K" unit (the projecting unit) of gear "K" and pin "B". There is a metal brush attached to the back of gear "K" which detects the passing through of all patterns and common patterns and stops sub-motor 1. This controls the head positioning, the head turning, the contact pressure of the play idler gear and the contact pressure of the pinch roller.
2. Head turning at pin "B" takes place until gear "K" starts turning which brings the "K" part into contact with the lever "B", "B" part. (Fig. 16-③)
3. Pin "B" engages with the arm "E" oval opening and rotates arm "E". The arm "E" sector gear is engaged with pin "C" and this turns the head. The head rotation pattern (Fig. 16-⑧) performs this operation inside a certain angle.
4. When gear "K" turns it also pushes the lever "B", "B" part. The "B" part turns arm "F" and arm "G" counter-clockwise and advances head base with the arm "G", "G" part. (Fig. 16-②, ⑤)
5. After the head base goes beyond the MS pattern (Fig. 16-⑥) position, the arm "F", "F" part pushes the pinch roller unit pinch spring and presses the pinch roller down onto the capstan. (Fig. 17)
6. Simultaneously, the arm "F", "F" unit pushes the arm "H", "H" part. The "H" part lock releases when pushed, and the play idler gear comes into contact with the reel unit. Play operation begins because of this. (Fig. 16-⑤, Fig. 17)
7. When going from play to eject, first, the pinch roller disengages from the capstan, and then using the pinch roller unit trapezoidal hole, releases the idler arm from the reel unit by means of pin "D". After that, the "H" unit again meshes with the idler arm and the "play" idler gear stops after completely disengaging from the reel unit.

## 5. FF/REW Operation

1. As with the head operations a brush is attached to the back of gear "P" and using patterns and the brush, position sensing takes place and this controls the FF/REW operation.
2. Sub-motor 2 goes through gears "L", "M" and "N" and turns gear "P". When gear "P" turns, arm "J" rotates by means of arm "J". Arm "I" rotates the FF/REW idler gear and engages it with the reel unit.

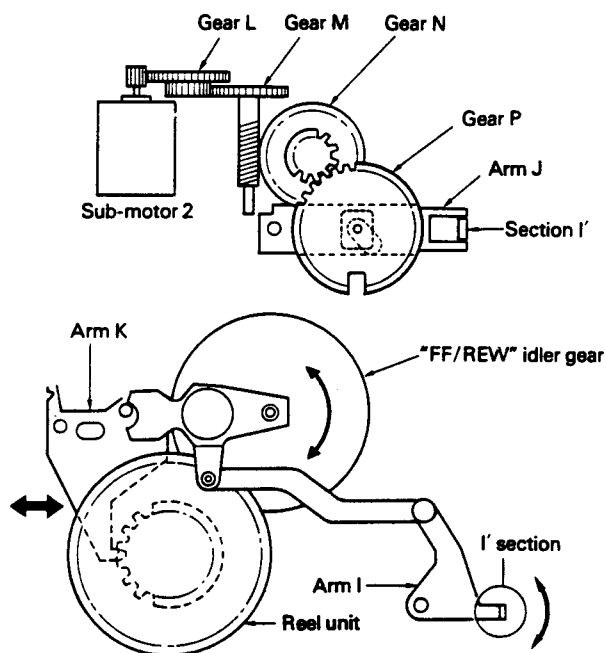


Fig. 18

## 3. ADJUSTMENT

### 3.1 AZIMUTH ADJUSTMENT

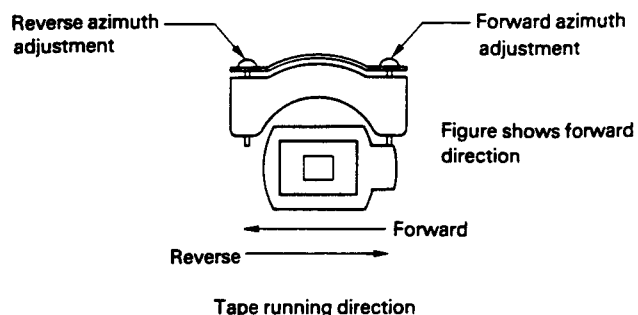


Fig. 19

#### • To Adjust

1. Play "A" side of STD-341A (10kHz, -20dB). Adjust each screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

### 3.2 TAPE SPEED ADJUSTMENT

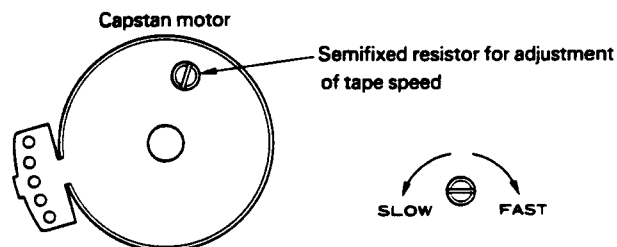


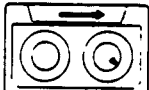
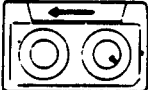


Fig. 20

#### • To Adjust

1. Reproduce STD-301 (3kHz, -10dB). Adjust the semifixed resistor so that the frequency counter shows 3,010Hz (+30Hz, -30Hz).

## 3.3 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism.</p>	<p>■ Tape speed deviation:</p> $3,000 \pm_{30}^{90} \text{ Hz}$ $(4.76 \text{ cm/s} \pm_{1}^{3} \%)$ <p>Using an STD-301, measure the speed at the start and end of winding and see that a deviation remains within the limits each time. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5~6 seconds.</p>	<p>■ Wow and flutter:</p> <p>Less than 0.15% (WMS)</p> <p>Using an STD-301, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5~6 seconds.</p>
<p>■ Fast forward and rewinding time:</p> <p>95 ~ 115 seconds</p> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<p>■ Winding torque:</p> <p>40 ~ 60g · cm</p>  <p>Using a cassette type torque meter (100 g · cm), measure the minimum value while in the play mode. Measuring time shall be 5 ~ 6 seconds.</p>	<p>■ F.F. torque:</p> <p>70 ~ 110g · cm</p>  <p>Using a cassette type torque meter (120 g · cm), measure the value when the tape stops in the F.F. mode.</p>
<p>■ REW torque:</p> <p>70 ~ 110g · cm</p>  <p>Using a cassette type torque meter (120 g · cm), measure the value when the tape stops in the REW mode.</p>	<p>■ Back tension torque:</p> <p>2.0 ~ 3.5g · cm</p>  <p>After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	<p>■ Cassette loading force:</p> <p>450 ~ 550 g</p> <p>Push the center of the cassette and measure the force with a tension meter (1 kg).</p>

## 4. EXPLODED VIEW

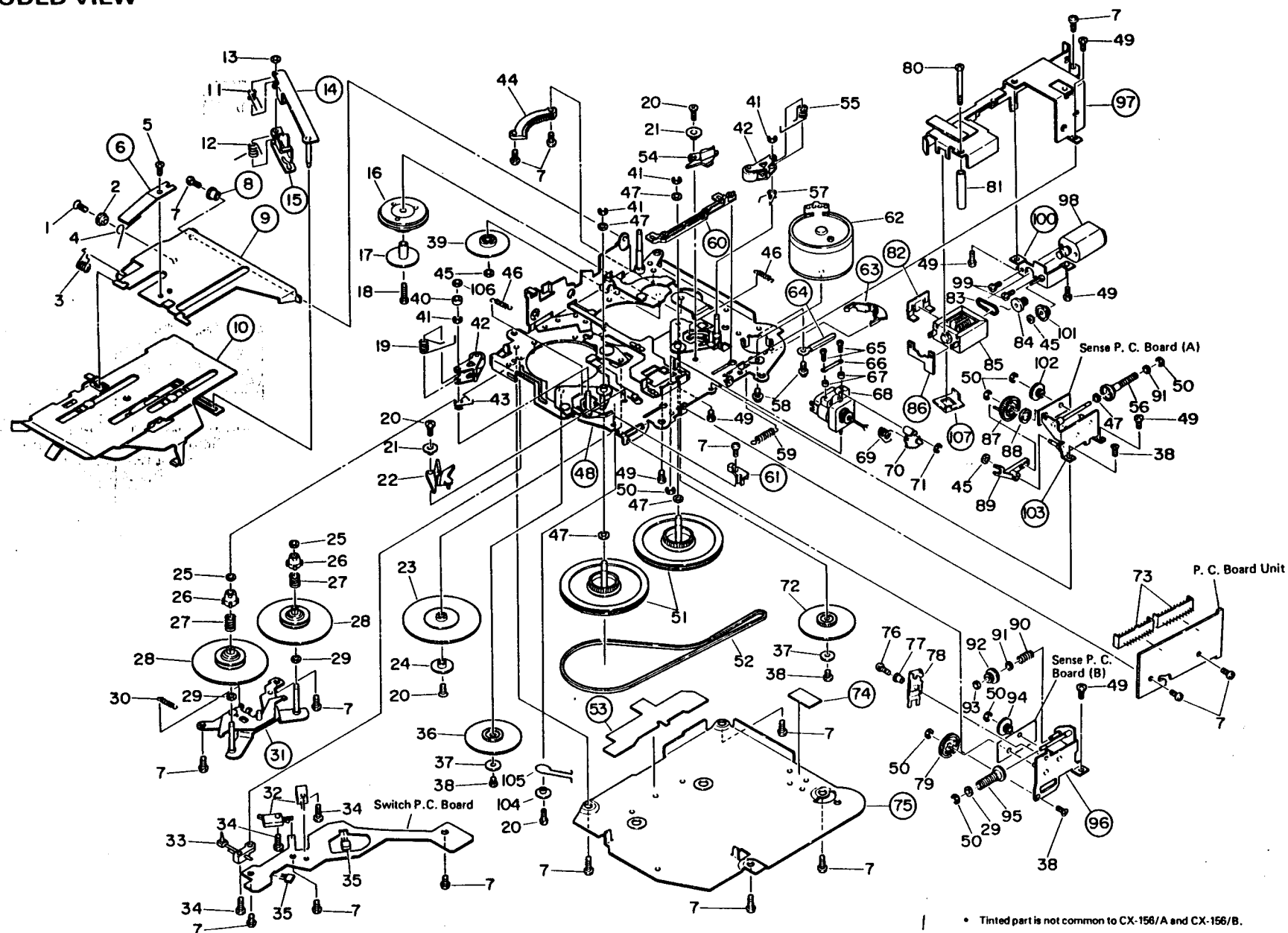


Fig. 21



## NOTE:

- For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.

★ ★: GENERALLY MOVES FASTER THAN ★.

This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

- Parts whose parts numbers are omitted are subject to being not supplied.

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	HBA-193	Screw M1.4×3.5		53.		Insulator
	2.	CLB-691	Collar		54.	CNW-931	Arm
	3.	CBH-837	Spring		55.	CBH-831	Spring
	4.	CBH-867	Spring		56.	CNW-956	Gear
	5.	HBA-147	Screw M1.4×1.4		57.	CBH-833	Spring
	6.		Spring		58.	PMS26P030FMC	Screw
	7.	BMZ20P040FMC	Screw		59.	CBH-830	Spring
	8.		Bush		60.		Lever
	9.		Arm		61.		Spacer
	10.		Holder Unit (CX-156/A)	★ ★	62.	CXM-161	Motor (Capstan)
			Holder Unit (CX-156/B)		63.		Clamper
	11.	CBH-836	Spring (CX-156/A)		64.		Clamper
		CBH-887	Spring (CX-156/B)		65.	CBA-173	Screw M1.4×8
	12.	CBH-886	Spring		66.	CBE-114	Spring
	13.	CBF-046	Washer		67.	CNY-134	Azimuth Rubber
	14.		Arm Unit	★ ★	68.	CXD-758	Head Unit
	15.		Arm		69.	CBH-829	Spring
	16.	CXD-388	Gear Unit		70.	CNW-939	Gear
	17.	CLB-617	Collar		71.	YE15FUC	Washer
	18.	CBA-166	Screw M1.7×8		72.	CNW-943	Gear
	19.	CBH-832	Spring		73.	CKS-534	Plug
	20.	HBA-310	Screw M2×3.5		74.		Insulator
	21.	CLB-612	Collar		75.		Cover
	22.	CNW-930	Arm		76.	HBA-158	Screw M1.4×5
	23.	CNW-944	Gear		77.	CLB-750	Collar
	24.	CLB-616	Collar		78.	CNH-004	Arm
	25.	CBF-135	Washer		79.	CNW-953	Gear
	26.	CNW-932	Collar		80.	CBA-165	Screw M2
	27.	CBH-827	Spring		81.	CLB-749	Spacer
★ ★	28.	CXD-384	Reel Unit		82.		Spacer
	29.	CBF-088	Washer	★ ★	83.	CNT-114	Belt
	30.	CBH-868	Spring		84.	CNW-941	Gear
	31.		Bracket Unit	★ ★	85.	CXM-351	Motor (Gear Position)
★ ★	32.	CSN-091	Switch (70 $\mu$ s, CST IN)		86.		P.C. Board
★ ★	33.	CSN-089	Switch (CST SET)		87.	CNW-952	Gear
	34.	CBA-172	Screw M1.7×5.5		88.	CNN-481	Spacer
★	35.	SDME106A	Magnetic Resistive Device		89.	CNW-958	Arm
	36.	CNW-943	Gear		90.	CBH-866	Spring
	37.	CLB-615	Collar		91.	HBF-116	Washer
	38.	HBA-209	Screw M2×2		92.	CNW-954	Gear
	39.	CNW-950	Gear		93.	CBF-135	Washer
	40.	CLB-690	Roller		94.	CNY-077	Gear
	41.	EBG-001	Washer		95.	CNY-148	Gear
★ ★	42.	CXD-387	Pinch Roller Unit		96.		Holder Unit
	43.	CBH-834	Spring		97.		Guide
	44.	CNW-951	Gear	★ ★	98.	CXM-452	Motor (Head Position)
	45.	CBF-126	Washer		99.	HBA-244	Screw M1.4×1.6
	46.	CBH-835	Spring		100.		Bracket Unit
	47.	HBF-179	Washer		101.	CNY-075	Pulley
	48.		Chassis Unit (CX-156/A)		102.	CNW-955	Gear
			Chassis Unit (CX-156/B)		103.		Holder Unit
	49.	HBA-175	Screw M2×2.5		104.	CLB-760	Collar
	50.	YE12FUC	Washer		105.	CBH-893	Spring
	51.	CNW-942	Flywheel		106.	HBF-180	Washer
★ ★	52.	CNT-111	Belt		107.		Cover

## 5. CONNECTION DIAGRAM

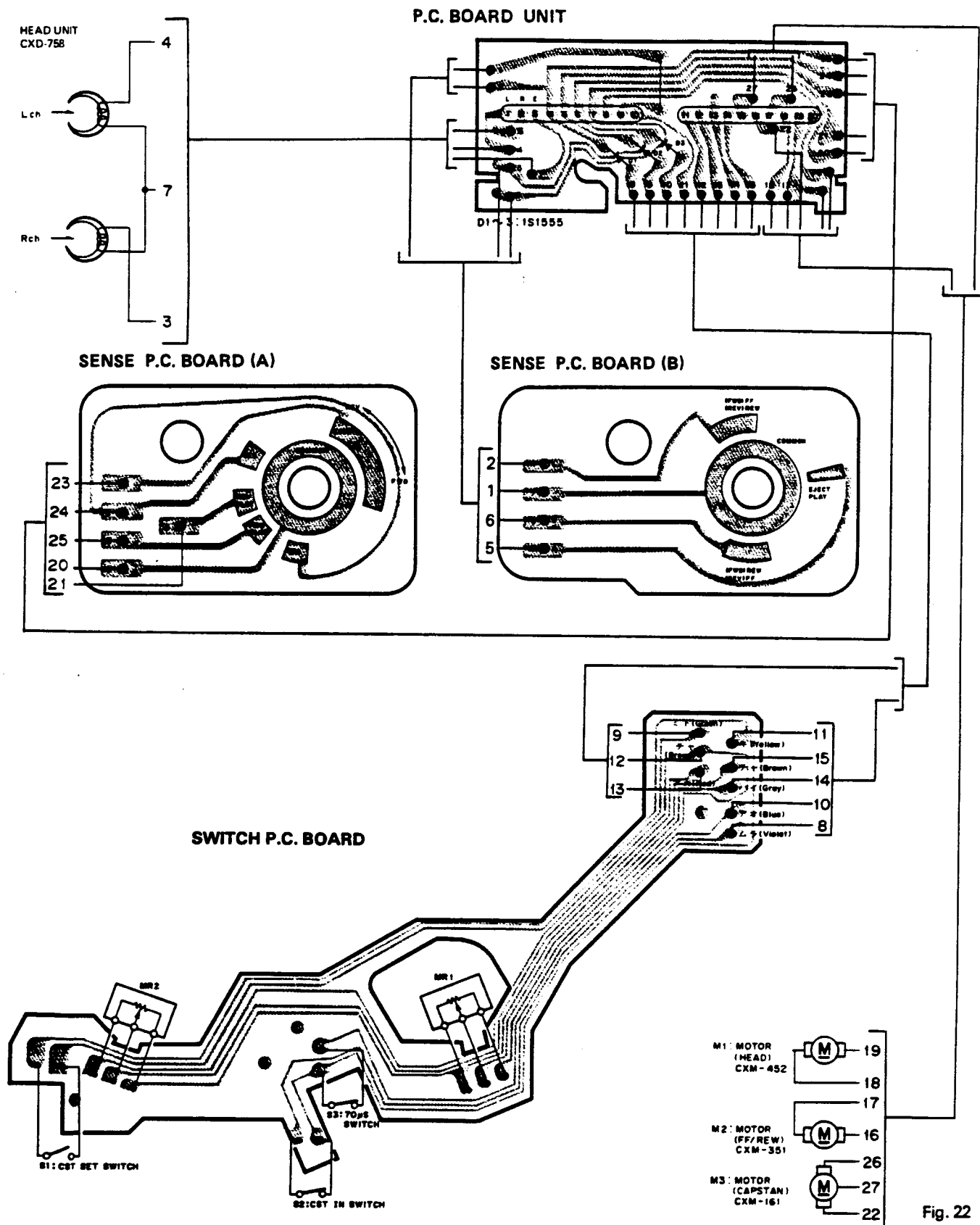
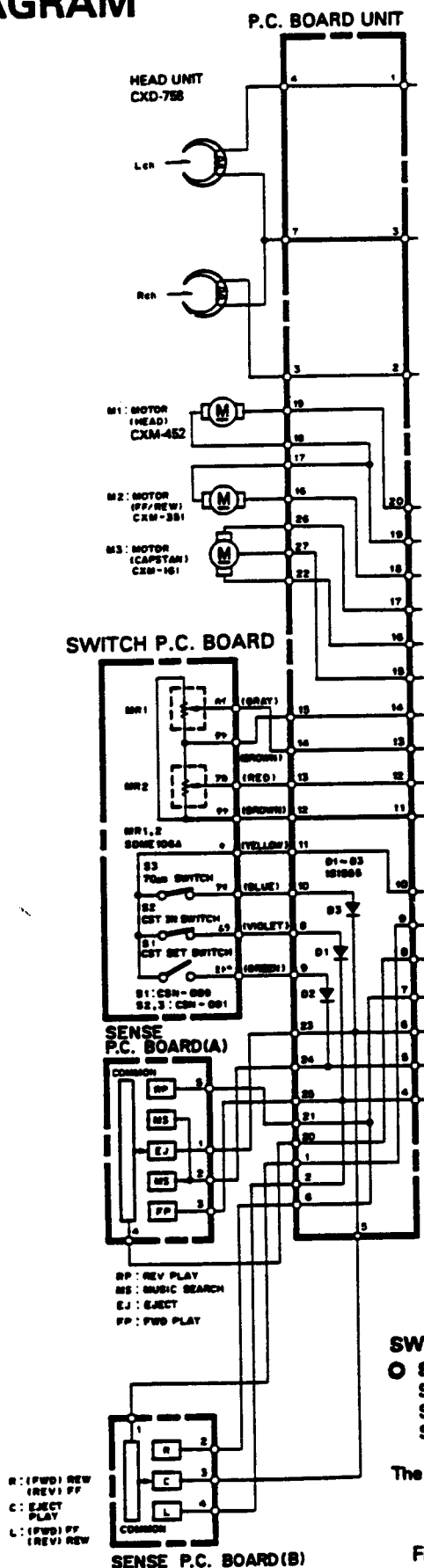


Fig. 22

## 6. SCHEMATIC CIRCUIT DIAGRAM



## 7. ELECTRICAL PARTS LIST

### Switch P.C. Board

Mark	Symbol & Description	Part No.
★ ★	S1 Switch (CST SET)	CSN-089
★ ★	S2, S3 Switch (CST IN, 70 μs)	CSN-091
★	MR1, MR2 Magnetic Resistive Device	SDME108A

### P.C. Board Unit

Mark	Symbol & Description	Part No.
★	D1 - D3	1S1555

### Miscellaneous Parts List

Mark	Symbol & Description	Part No.
★ ★	Head Unit	CXD-758
★ ★	M1 Motor (Head)	CXM-452
★ ★	M2 Motor (Gear)	CXM-351
★ ★	M3 Motor (Capstan)	CXM-161

### SWITCHES

○ SWITCH P.C. BOARD	
S1: CST SET SWITCH.....	ON—OFF
S2: CST IN SWITCH.....	ON—OFF
S3: 70μs SWITCH.....	ON (120μs)—OFF (70μs)

The underlined indicates the switch position.

Fig. 23